The Return of China – The Long March to Power: The New Historic Mission of the People’s Liberation Army is part of a broader research programme on China. It is conducted by China Studies located at the Institute for Strategy, Royal Danish Defence College. The aim of the project is to investigate how China’s growing economic and military power will lead to a new security and defense balance in the Asia-Pacific region and globally, among these being to explain the consequences for China’s neighbours and the sole superpower, the US.

The research programme consists of five main topics:

- China’s role as an economic superpower
- China as a military power
- China’s relationship with the US
- China’s role as a global actor
- China’s role as a regional actor

In the light of the research programme it will be described how the West can best develop a policy that makes room for a rising China within the framework of a changed international system.
THE LONG MARCH TO POWER

THE NEW HISTORIC MISSION

OF THE PEOPLE’S LIBERATION ARMY

by

Kim Nødskov

2009
Royal Danish Defence College Publishing House
About the author

Mr. Kim Nødkov
Research

Mr. Kim Nødkov underwent the Royal Danish Air Force Academy basic officer training from 1984 to 1987, and was operationally trained as a Tactical Control Officer on the IHAWK Surface to Air Missile System. In 1992, he was promoted to captain. He was promoted to major in 1997 after having completed the Joint Senior Staff Course at the Royal Danish Defence College, where he wrote a thesis on NATO implementation of Joint Doctrine. In 2003, he was promoted to Lieutenant Colonel.

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He retired from the Royal Danish Air Force in 2007 and produced this book working for the Royal Danish Defence College. Contact with the author can be made through email: kim.noedskov@gmail.com
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<tr>
<td>AAA</td>
<td>Anti-Air Artillery</td>
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<td>AAW</td>
<td>Anti-Air Warfare</td>
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<tr>
<td>ADCCS</td>
<td>Air Defense Command and Control System</td>
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<tr>
<td>AESA</td>
<td>Active Electronically Steered Array</td>
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<td>AEW</td>
<td>Airborne Early Warning</td>
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<td>AFV</td>
<td>Armored Fighting Vehicle</td>
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<td>AICCC</td>
<td>Aviation Industry Corporation of China</td>
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<tr>
<td>ALO</td>
<td>Air Liaison Officer</td>
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<tr>
<td>ASuW</td>
<td>Anti-Surface Warfare</td>
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<td>ASW</td>
<td>Anti-Submarine Warfare</td>
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<td>AVIC</td>
<td>Aviation Industries of China</td>
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<tr>
<td>AWACS</td>
<td>Airborne Warning And Control System</td>
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<td>BMD</td>
<td>Ballistic Missile Defense</td>
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<td>BVR</td>
<td>Beyond Visual Range</td>
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<td>BWC</td>
<td>Biological Weapons Convention</td>
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<td>CAIHC</td>
<td>China Aviation Industry Helicopter Company Limited</td>
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<tr>
<td>C2</td>
<td>Command and Control</td>
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<tr>
<td>C4I</td>
<td>Command, control, Communication, Computers and Intelligence</td>
</tr>
<tr>
<td>C4ISR</td>
<td>Command, Control, Communication, Computers, Intelligence, Surveillance and Reconnaissance</td>
</tr>
<tr>
<td>C4ISTAR</td>
<td>Command, Control, Communication, Computers, Intelligence, Surveillance, Targeting and Reconnaissance</td>
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<tr>
<td>CAC</td>
<td>Chengdu Aircraft Corporation</td>
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<td>CAS</td>
<td>Close Air Support</td>
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<td>CASIC</td>
<td>China Aerospace Science and Industry Corporation</td>
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<td>CASTC</td>
<td>China Aerospace Science and Technology Corporation</td>
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<td>CETC</td>
<td>China Electronics Technology Enterprise Corporation</td>
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<td>Abbreviation</td>
<td>Description</td>
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<tr>
<td>CMC</td>
<td>Central Military Commission</td>
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<td>CNECC</td>
<td>China Nuclear Engineering and Construction Corporation</td>
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<td>CNNC</td>
<td>China National Nuclear Corporation</td>
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<td>COEG</td>
<td>China Ordnance Equipment Group Corporation</td>
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<td>COIG</td>
<td>China Ordnance Industrial Group Corporation</td>
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<td>COMAC</td>
<td>Commercial Aviation Corporation</td>
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<td>COMECON</td>
<td>Council For Mutual Economic Assistance</td>
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<td>COSTIND</td>
<td>Commission of Science, Technology and Industry for National Defense</td>
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<td>CPC</td>
<td>Communist Party of China</td>
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<td>CSIC</td>
<td>China Shipbuilding Industry Corporation</td>
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<td>CSSC</td>
<td>China State Shipbuilding Corporation</td>
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<td>CWC</td>
<td>Chemical Weapons Convention</td>
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<td>ECM</td>
<td>Electronic Counter Measure</td>
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<td>ELINT</td>
<td>Electronic Intelligence</td>
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<td>EMOU</td>
<td>Emergency Mobile Operations Unit</td>
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<td>EU</td>
<td>European Union</td>
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<td>EW</td>
<td>Electronic Warfare</td>
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<td>GA</td>
<td>Group Army</td>
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<td>GAD</td>
<td>General Armement Department</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>GPS</td>
<td>Global Positioning System</td>
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<td>GSO</td>
<td>Geostationary Orbit</td>
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<tr>
<td>HUD</td>
<td>Head-Up Display</td>
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<tr>
<td>IFR</td>
<td>In Flight Refueling</td>
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<td>IFV</td>
<td>Infantry Fighting Vehicle</td>
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<tr>
<td>IJO</td>
<td>Integrated Joint Operations</td>
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<tr>
<td>INS</td>
<td>Inertial Navigation System</td>
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<td>IR</td>
<td>Infrared</td>
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<td>Abbreviation</td>
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<tr>
<td>IRST/LR</td>
<td>Infra-Red Search and Track and Laser Range Finder</td>
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<td>IISS</td>
<td>International Institute For Strategic Studies</td>
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<tr>
<td>JO</td>
<td>Joint Operations</td>
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<tr>
<td>JSTARS</td>
<td>Joint Surveillance and Target Attack Radar System</td>
</tr>
<tr>
<td>JTIDS</td>
<td>Joint Tactical Information Display System</td>
</tr>
<tr>
<td>LACM</td>
<td>Land Attack Cruise Missile</td>
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<tr>
<td>MAWS</td>
<td>Missile Approach Warning System</td>
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<tr>
<td>MPA</td>
<td>Maritime Patrol Aircraft</td>
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<td>MD</td>
<td>Military District</td>
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<td>MOOTW</td>
<td>Military Operations Other Than War</td>
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<td>MOU</td>
<td>Memorandum Of Understanding</td>
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<td>MR</td>
<td>Military Region</td>
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<td>MRAAM</td>
<td>Medium Range Air to Air Missile</td>
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<tr>
<td>MRL</td>
<td>Multiple Rocket Launcher</td>
</tr>
<tr>
<td>MSL</td>
<td>Missile</td>
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<tr>
<td>NATO</td>
<td>North Atlantic Treaty Organization</td>
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<tr>
<td>NCO</td>
<td>Noncommissioned Officers</td>
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<tr>
<td>NDL</td>
<td>National Defense Law</td>
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<td>NDU</td>
<td>National Defense University</td>
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<tr>
<td>NFU</td>
<td>No First use</td>
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<tr>
<td>NSC</td>
<td>National Security Council</td>
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<tr>
<td>PAP</td>
<td>People’s Armed Police</td>
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<td>PLA</td>
<td>People’s Liberation Army</td>
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<td>PLAN</td>
<td>People’s Liberation Army Navy</td>
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<td>PLANANAF</td>
<td>People’s Liberation Army Navy Air Force</td>
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<td>PLANAAF</td>
<td>People’s Liberation Army Air Force</td>
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<td>PP</td>
<td>Power Projection</td>
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<td>PPP</td>
<td>Purchase Power Parity</td>
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<td>Abbreviation</td>
<td>Description</td>
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<tr>
<td>PRC</td>
<td>People’s Republic of China</td>
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<td>R&amp;D</td>
<td>Research and Development</td>
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<tr>
<td>RMB</td>
<td>Renminbi</td>
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<tr>
<td>RNG</td>
<td>Range</td>
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<tr>
<td>RRU</td>
<td>Rapid Reaction Unit</td>
</tr>
<tr>
<td>SAM</td>
<td>Surface to Air Missiles</td>
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<tr>
<td>SAR</td>
<td>Search And Rescue</td>
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<tr>
<td>SASTIND</td>
<td>State Administration of Science, Technology and Industry for National Defense</td>
</tr>
<tr>
<td>SCO</td>
<td>Shanghai Cooperation Organization</td>
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<tr>
<td>SIGINT</td>
<td>Signal Intelligence</td>
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<tr>
<td>SIPRI</td>
<td>Stockholm International Peace Research Institute</td>
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<td>SLOC</td>
<td>Sea Lines of Communication</td>
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<td>SP</td>
<td>Self Propelled</td>
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<tr>
<td>SRAAM</td>
<td>Short Range Air to Air Missile</td>
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<td>SSO</td>
<td>Sun-Synchronous Orbit</td>
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<tr>
<td>TV</td>
<td>Television</td>
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<tr>
<td>UAV</td>
<td>Unmanned Aerial Vehicle</td>
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<tr>
<td>UCAV</td>
<td>Unmanned Combat Aerial Vehicle</td>
</tr>
<tr>
<td>UI</td>
<td>Unidentified</td>
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<tr>
<td>UN</td>
<td>United Nations</td>
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<tr>
<td>U.S.</td>
<td>United States</td>
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<tr>
<td>USAF</td>
<td>United States Air Force</td>
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<tr>
<td>XAC</td>
<td>Xi’an Aircraft Corporation</td>
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Foreword

Over the course of the past 30 years, we have witnessed the return of China as an economic superpower, and the financial crisis of present years has made this even more visible.

With economic power comes political power – but China still lacks military power. However, the Chinese defense budget has on average risen by 15 percent annually for the past 10 years, and most other militaries in the world in fact envy the Chinese military these increases.

China’s military budget is now the second largest in the world (even if there is a long way up to no. 1; the USA), and as this study shows, China has been able to modernize part of her military forces – first and foremost the Air Force, the Navy, the nuclear forces and some ground force units – without having to cut the traditional land-based ground force dramatically.

It is important to understand that China – at least at this stage – is not trying to compete with the US in the military field, but that it is taking the steps necessary to becoming a military superpower.

A military superpower must be able to project force outside the country’s immediate zone of regional interests. A blue-water navy and space would be two clear aspects of such capabilities, and here the conflict with Taiwan can no longer be seen as the driving force for military considerations. With the relatively recent shooting down of an old Chinese satellite, China has demonstrated that the US cannot expect to have space to itself in the future.

The clear indications that China in the foreseeable future intends to become a dominant regional power, and in the long term a global power, does, however, not necessarily mean that China poses a threat to her neighbors (or indeed to the world), as some scholars seem to think. A threat presupposes both capability and intent.

There are not many examples in history books of a rising power being integrated peacefully into the existing international system.

The challenge is that we have to do better this time.

Mr. Hans Hækkerup
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Acknowledgements

The Royal Danish Defence College contracted me for a period of two years to research and write this book about the modernization of the Chinese People’s Liberation Army. My employment at the Royal Danish Defence College has been unusual in that I have done most of my research in Oxfordshire, England, where I live at the moment. However, willingness to accept this unusual arrangement has made this project possible. I would like to thank the Research Director of China Studies at the Royal Danish Defence College, Hans Hækkerup, and the Director of the Institute of Strategy Ole Kværnø at the Royal Danish Defence College, for agreeing to my employment arrangement and supporting me throughout the project.

I would also like to thank Magnus Hjortdal at the China Studies Institute for reviewing the book and providing constructive feedback, daily telephone conversations and administrative support. I would like to thank Colonel Jakob Henius from the Royal Danish Defence College for reading and providing critique of the book, which has helped improve it.

A special thanks to Larry M. Wortzel, who reviewed the entire book and on numerous occasions helped me to understand difficult issues, and who assisted me in acquiring information from the many excellent ongoing research projects in the United States (U.S.) that I had difficulty obtaining.

Thank you very much to Kenneth W. Allen for reviewing my analysis of the PLA Air Force and the PLA power projection capability and to Dennis Blasko for reviewing the chapters related to the PLA ground forces and the power projection capability. Kenneth W. Allen and Dennis Blasko are some of best experts on the PLA with many years of experience and they gave me very valuable contributions. Thank you for that. I would also like to thank Camilla T.N. Sørensen, Department of Political Science, University of Copenhagen for reviewing the entire book and providing excellent feedback.

Finally, I would like to thank my wife, Nahieda Majid, who has had endless patience with me during the many hours I have spent on this project over the course of the last two years, where I have mentally been in China, and not at home.

Kim Nødskov
Introduction

This book is an analysis of the Chinese People’s Liberation Army (PLA) and the modernization it is going through. The intended audiences of this book are political scientists and military observers of the PLA, who seek more knowledge about the PLA and the international security political consequences of the current modernization of the Chinese military. The main focus of the book is the conventional forces of the PLA, as they will be the main component of the future Chinese military capability. For that reason the People’s Armed Police is not covered and the aspects of the Chinese space program that are more of a civilian nature, such as the manned space missions and the mission to the moon are not covered either. The book offers a different and new approach to analyzing the PLA, and assessing its capabilities, with the intention of improving the understanding of the PLA modernization. The book will analyze the PLA organization and equipment as well as the doctrine and training of all the services in the PLA, and provide a better understanding of the future PLA. Great military insight is not required to read this book. When complex military issues are discussed, I have tried to explain them, and thereby provide non-military people a greater understanding of what is happening with the PLA, and what it means to the world. I would especially like to recommend the analysis of the ground forces which is done in a geostrategic context. The chapter on the air force takes a look at the doctrinal changes to offensive operations, and the chapter on the navy provides an new way of analyzing the PLA Navy’s blue water capability. The nuclear chapter describes the impact of the U.S. ballistic missile defense on the Chinese nuclear deterrence strategy. There is a detailed analysis of the Chinese satellite capability and an assessment of the risk of an arms race in space and there is a comprehensive analysis of the PLA power projection capability in chapter thirteen.

A study of the PLA is a complex issue. What is of interest to a foreign observer of the Chinese military forces, is the current and future capability of the PLA, and how China might employ it. This is very difficult to determine, as it requires a complex assessment of the current capabilities of the PLA and the development of these, combined with an assessment of China’s grand strategic and military strategic intentions for the future. The Chinese government is not transparent about its defense policy, and does not provide much information about its intentions for the future. The 2008 white paper on China’s National Defense, published by the Chinese government, is mostly an assessment of the current geostrategic environment and an overall description of the modernization process of the PLA, but there is no clear description of intentions or what the future PLA will look like. An assessment of China’s intentions is therefore a highly speculative affair. Some sources on the PLA that are published in the West are biased, and seek to portray China as a potential future threat, whereas other papers, mostly published in China, portray China as the most peaceful nation of all. I do not subscribe to any of those two extremes. Trying to determine the intentions of the Chinese govern-
ment is important for maintaining a security political balance in the region as well as globally, but it is by nature a speculative affair. This book will not deal with political intents, but exclusively focus on current and future military capabilities of the PLA, and thereby leave it to the reader to assess the political consequences of the modernization of the PLA.

In my research of the PLA, I have collected and studied more than 3,000 pieces of information, ranging from books, research papers, newspaper articles and other information covering all aspects of the PLA. As mentioned, researching information about the PLA is difficult, since the Chinese military is very restrictive about what information they release. The PLA Daily\(^1\) website is one source of information which the PLA uses to inform about its affairs. This website is quite unique, as it provides information about activities that are taking place, as well as about new equipment or new doctrine that is implemented. Unfortunately, the information is written in a cryptic way, obscuring identities of units and any details about equipment even down to its name. It therefore takes a bit of detective work to analyze which units and what equipment the news refers to. The website is naturally biased towards the Communist Party of China (CPC) and is used to inform about CPC policies of a military nature. Another type of information that emerges from China is when unofficial Chinese subject matter experts are quoted in the Chinese press, or pictures of military equipment or exercises are made public on the Chinese internet. The Chinese government censors information released to the press, which means that the information either reflects government policy or is close to it. I have therefore given this kind of information a fair level of validity. I seek to verify sources of this nature from as many other sources as possible, and assess whether the information fits into a broader picture. There are a number of very qualified experts on Chinese military matters, from whom I have obtained a lot of knowledge. Those not mentioned please forgive me, but some of the experts whose work I have consulted are; Kenneth W. Allen, Dennis J. Blasko, Dean Cheng, Tai Ming Cheung, Bernard D. Cole, David Finkelstein, Roy Kamphausen, Xiaobing Li, Evan S. Medeiros, James Mulvenon, Andrew Scobell, David Shambaugh, Michael D. Swaine and Larry M. Wortzel. These experts provide highly qualified analytical assessments of the Chinese military, which have been of great value. For information about military equipment, organizations and orders of battle, I have made a cross-check between three sources of information, which I find very reliable. These are Jane’s,\(^2\) the website Sinodefence.com,\(^3\) and the annual publication of the Military Balance from the International Institute for Strategic Studies (IISS). I have also on a daily basis researched Chinese and international newspapers to stay updated on current affairs, and when I have used these as sources of information, I have sought to acquire more than one source to confirm the validity. It can sometimes be difficult though, since they often quote the same original source of information. In cases like that, I have tried to assess

\(^{1}\) PLA Daily website (http://english.chinamil.com.cn).
\(^{2}\) Jane’s Intelligence (http://www.janes.com).
\(^{3}\) Sinodefence.com, (http://www.sinodefence.com).
whether the information makes sense in a greater context, and thereby establish a level of validity of my research. Some non-Chinese sources have an interest in portraying China as a future threat. It is not the intention of this book to portray China as a future threat, and in cases where sources of such nature have been used, it is exclusively for facts or events. I do not yet master the Chinese language and have therefore not used many sources in Chinese. I have had to rely on translations to English and for this reason I have probably missed some information. The few cases, where Chinese language sources have been used, I have had them translated from multiple sources to establish a good level of validity of the translation. I know that there is information available in Chinese such as technical details of weapon systems and opinion papers published by various officers in the domestic Chinese debate that could have been interesting to the military experts. A lot of the technical information that is available on the internet is of very doubtful validity. Overall I am convinced that the trend in the analysis of the PLA modernization is valid.

Taiwan relations are an important issue in Chinese policy, and the prospect of a future military conflict over Taiwan with the involvement of the U.S. has been a key motivator for the modernization of the PLA. Many of the capabilities that the PLA has developed are designed for this potential conflict. There are plenty of studies of a potential Taiwan crisis, and I do not think that one more analysis would provide significant new information on this issue. Over the course of the past year, the political climate between China and Taiwan has improved significantly, even to the point where the Chinese government describes the relations as having taken a “significantly positive turn.” If this positive turn continues and the cross Strait relations improve further, then it is likely that the PLA will decide that preparing for a military Taiwan operation is no longer the scenario for the modernization of the PLA. This report will therefore generally ignore the issue of a Taiwan crisis, and instead analyze the capabilities of the PLA from a general point of view, with no particular crisis in mind.

The change that the PLA is going through should not be underestimated; it is a true change of paradigm. It is a long term modernization plan taking the PLA into the middle of the 21st century, and at that time the PLA will be a completely different force from when it started. The transformation process started in the early 1980’s, and over a period of 4 to 6 decades the PLA will be transformed from a people’s infantry ground force into a modern joint high-tech maneuver force, and may become one of the strongest militaries in the world.

This book will initially describe the development of Chinese defense strategy. China does not have an official defense strategy like e.g. the U.S. does. However, we can surmise what it might be. First we will look at Chinese defense doctrine and the political directives that have been issued to the PLA, including the “New Historic Mission”, which President Hu Jintao issued the PLA in December 2004. Thereafter China’s “strategic concerns” will be discussed. China is a continental power, but also has concerns of a maritime nature, which the Chinese perceive as being of strategic importance. This will have great impact on the future of the PLA. In order to understand the Chinese military in a political context it is important to understand China’s strategic culture, as in; understanding the Chinese view
on the use of military force. To the Chinese, what can motivate and justify the use of military force? The Chinese believe that the use of military force is a political tool, and in Chapter 2 it will be discussed how the Chinese leadership throughout history has allowed and restricted the use of military force to achieve its political ends.

In the following chapter 3 we will take a look at the all important defense budget. The spending of money on military forces is a strategic investment in security and the ability of a state to protect its national interests. The size of the defense budget is a political expression of the importance and the priority given to the military. The Chinese defense budget has risen significantly every year since 1990, and China is now the second biggest spender on military forces in the world. Chapter 3 will provide an analysis of the defense budget, its growth and its relationship with the Gross Domestic Product (GDP). For the purpose of maintaining a military balance and to avoid arms races, states compare their military budgets to determine whether the balance is maintained, and whether there are any threats developing on the horizon. However, this is difficult with the official Chinese defense budget, as it does not conform to the international standards of the United Nations on the reporting of military expenditure. Chapter 3 will explain what the difference is, and offer an assessment of what the real Chinese defense budget could be.

Chapter 4 will look at the relationship between the PLA and the CPC. Historically the PLA has been an integral part of the CPC. However, over the past decades the ideological part of the CPC has subsided, and the PLA now places less emphasis on its political role and more on its professional military role. We will look at how the symbiotic relationship between the PLA and the CPC is changing. From there, the analysis of the military forces starts. Chapter 5 will describe the general changes of the PLA that are applicable to all services, and following that, Chapter 6 will describe the changes of the ground forces. China is a very large country and the organization, equipment and training of the ground force differs between the various regions. Chapter 6 offers an analysis of the ground force’s organization in each of the seven Military Regions (MR), and offers an evaluation of the security political aspects of the ground force’s composition in each region. The chapter will discuss the ground force’s doctrinal development and the modernization and digitalization of its equipment and command and control (C2) systems, and finish with an assessment of the capability of the ground force.

The PLA Air Force (PLAAF) is going through dramatic changes, which will be described in chapter 7. The PLAAF is being technologically updated, and is implementing new tactical level doctrine, which all together will transform the PLAAF from exclusively being an air defense force, into a modern air force capable of conducting both offensive and defensive operations. Procedurally, the PLAAF is dele-

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gating the tactical level authority to its airborne mission commanders similarly to western air forces, and it may be expected that the PLAAF will become a much more mature and competent air force in 10 to 15 years.

Chapter 8 will offer something different from most papers on the PLA Navy (PLAN). Initially, evidence is provided making it highly likely that a broadly founded political decision has been made to develop a blue water navy. Recently, China started the renovation of the former Ukrainian aircraft carrier Varyag, and is also on the verge of building her first aircraft carrier for the purpose of developing a blue-water navy that can sail the deep seas. Chapter 8 will analyze what such a navy could look like, its future potential capabilities, and were and how a Chinese blue water navy might operate.

Chapter 9 is a description of the PLA’s development of its joint warfare doctrine. Inspired by the U.S. Joint Doctrine, the PLA has begun the development of a joint doctrine, but has adopted its own version of a joint war fighting organization. We will look at how the PLA trains joint operations, and examine its development of a command and control system that can support its doctrine. A successful implementation of a joint doctrine will improve the war fighting capability of the PLA significantly.

After having described the conventional forces, chapter 10 will describe the nuclear forces of the PLA and the Chinese nuclear deterrence concept. The Chinese apply a “credible minimum deterrence” concept, and its credibility hinges on an assured second strike capability. This second strike capability, and thereby the credibility of the Chinese nuclear defense concept, may be jeopardized by the U.S. development of a ballistic missile defense system, which will be discussed.

The Chinese have a very active space program. Analyzing the entire space program is out of scope for this book, so the analysis will focus on the Chinese use of satellites to support conventional and nuclear operations. Chapter 11 offers an analysis of the current and future satellite capability of the PLA, and of its ability to support out of region operations.

If the PLA is to become a force equal to other militaries in the world, then the PLA cannot rely exclusively on buying its military equipment abroad. International arms dealers are rarely allowed to sell the most sophisticated equipment to other states, and if the PLA is to become as sophisticated as other great powers of the world, then China must be able to manufacture weapons with a level of sophistication equal to those produced by Western arms producers. The Chinese defense industry has struggled to catch up to the West, but large investments and transfers of technology to the Chinese industry have improved its technological level. Chapter 12 will describe the structure of the Chinese weapons industry, and analyze how a change of strategy may help the industry to close the technology gap between it and its Western counterparts.

Before the final conclusion, chapter 13 offers a final analysis of the PLA power projection capability. Based upon the detailed description of how the PLA is changing and the capabilities of the three services, this chapter will analyze the ability of the PLA to project power out of region. Many observers of the PLA are keeping a close eye on whether the PLA is developing the capability to project power abroad, and this chapter will contribute to this discussion. The capabilities of each of the
services will be discussed in detail, and a final conclusion on the power projection capability of the PLA will be drawn.

The lack of transparency of the Chinese military makes it very difficult to say anything with certainty about it, and only time will tell whether the assessments and predictions of this book are correct. I have done my best to maintain the credibility of the analysis, and clearly specify when assumptions are made. But more importantly, it has to make sense, and I have, to the best of my ability, applied my 24 years of experience as an officer in the Royal Danish Air Force, to ensure that my conclusions make strategic sense in the context of China. To understand the strategic context of China, the following chapter will discuss China’s strategic defense strategy and the issues that are of strategic concern to China.
2.

China’s Defense Strategy

The Evolution of the PLA Defense Doctrine

From People’s War to People’s War under Modern Conditions

The Chinese defense doctrine has gone through five phases since 1949, as the strategic situation in the region and the threats to China have changed over time. The first phase, which started in the mid 1930’s and lasted until the end of the 1970’s, was the “Peoples War” doctrine. This was a manpower intensive doctrine that was to ensure protection from invading high-tech armies from the U.S.\(^5\) and the Soviet Union,\(^6\) which were the main threats during this time. The doctrine was based on the use of light infantry, which in case of attack would lure the enemy into the strategic depth utilizing the vast Chinese territory, where the PLA would overwhelm the enemy in a counter offensive. The PLA were continentally focused and dominated by the ground force. The PLAAF and the PLAN primarily had a defensive mission and operated independently.\(^7\) In the late 1970’s, the PLA began to consider a doctrinal modification that gained momentum after the 1979 border war against Vietnam, where the PLA, in spite of a declared victory, suffered severe losses due to inefficient military operations. The PLA initiated a modernization of the armed forces and changed the doctrine to “People’s War under Modern Conditions”. This new doctrine prescribed a greater degree of mechanization of the ground force with the intention of defending China closer to its borders. During this time, relations with the Soviet Union were tense, and the Soviet Union was considered the main threat to China. China would defend herself against a Soviet attack in a mobile war with improved combined arms warfare (tanks, infantry, artillery, engineers) and joint support across the services. Nuclear weapons were expected to be used. The change in doctrine required larger investments in tanks and armored personnel carriers than China could afford, but the initiative did lead towards a higher degree of mobility.\(^8\)

\(^{5}\) China was very concerned about the prospect of the U.S. involvement in a war over Taiwan. See Xiaobing Li, “A History of the Modern Chinese Army”, University Press of Kentucky, 2007, pp. 178-189.


\(^{8}\) Ibid pp.53-54.
Local War under Modern Conditions

In 1985, the Sino-Soviet relations improved, causing China to reassess her defense strategy. As the threat of a total war of survival with the Soviet Union no longer loomed, the threat against China had diminished, and future wars were assessed to be small wars for limited objectives along the periphery of China’s borders. China redefined its defense strategy from “People’s War under Modern Conditions”, which was based on attrition warfare in depth, to “Local War under Modern Conditions”, which was limited warfare for limited objectives along the periphery of China’s borders. With the northern threat gone, China would reorient south toward the sea, which naturally lead to a prioritization of naval and air forces that hitherto had been neglected. Early victory was seen as essential, and offensive operations were given precedence over defensive operations. Though Mao’s People’s War strategy had emphasized offensive operations and quick decision attrition warfare, the 1985 revision of strategy raised offensive operations from the operational level to the strategic level of war, causing strategists to think in terms of pre-emption, since the initial stages of a war were seen as crucial.9

There was no longer a requirement for a mass mobilization ground force, but rather a need for a smaller force capable of joint operations at a high readiness level. In 1985, the PLA took the necessary steps to fund the required modernization. They decreased the PLA’s size from a 4.2 million man ground force to 3.2 million, reduced the number of military regions from 11 to 7, and reorganized the ground force by reducing 37 Field Armies into 24 Group Armies10 (GA)11.

However, the effort to modernize and improve the PLA combat efficiency got sidetracked by the alternative activities of the PLA. Since its inception, the PLA had grown much of its own food, raised its own animals, engaged in local construction projects and business activities.12 Defense budgets were very low, so the PLA resorted to agriculture, civilian trade, business13 and widespread corruption14 to supplement its economy. This diverted PLA activities from combat training to farming, trade and business, leading to a reduction in combat efficiency. The PLA also struggled with a heritage of

10) A Group Army can be compared to a Corps in western military terminology in terms of composition. However they are not the same.
11) Mark A. Ryan, David M. Finkelstein & Michael A. McDevitt, "Chinese War Fighting, the PLA Experience Since 1949", An East Gate Book, 2003, p.44.
older and lesser qualified officers and soldiers that impeded the development and modernization of
the PLA from a personnel intensive ground force to a high tech force.\(^{15}\)

### Local War under Modern High Tech Conditions

However, the American led war in Kuwait in 1991 would change this. During the war, the Americans had put on a stunning display of military power involving stealth bombers, precision bombing, information operations and dynamic maneuver warfare. The Americans bombed with impunity, using precision bombs and cruise missiles against strategic targets in Baghdad and elsewhere in Iraq, and carrier groups were positioned in the Persian Gulf striking deep into Iraq, without Iraqis being able to strike back. The Iraqis were overrun, and to make matters worse, many of the Iraqi weapons were of Chinese manufacture; such as the Iraqi tanks, which the Americans destroyed one by one with ease. When Saddam Hussein launched a punitive retaliatory attack with Scud missiles, American deployed Patriot missile batteries were able to intercept many of them, using satellite detection and computerized trajectory calculation. An awesome display of high technology power, which told the world and the PLA, that the power of the U.S. was second to none.\(^{16}\) The PLA conducted a thorough analysis of the war, and received a blow to their confidence when they realized how far behind they were lagging in military efficiency compared to the U.S. This led to a general acceptance among the PLA officers that change was required, but it would require further reductions in the still enormous ground force, and also significant investments in air, naval and missiles forces. The doctrine was changed to “Local War under Modern High Tech Conditions”, signaling a total focus on mechanization and the acquisition of high technology weapons.

China and the U.S. have been in a dispute over the independence of Taiwan since 1949, when Kuomintang, led by Chiang Kai-Shek, retreated from mainland China to Taiwan. It led to military conflict several times in the 1950’s, but tension lessened in subsequent years. However, no resolution to the disagreements was found. In 1995-1996, the Taiwanese president Lee Teng-hui visited the U.S. which upset the Chinese leadership. To signal its displeasure with the visit, China conducted a missile test firing close to Taiwan; not only to pre-empt any Taiwanese attempts towards independence, but also to put pressure on the U.S. to stay with their original policy of One China. In response, to demonstrate American resolve to protect its allies and friends, the U.S. deployed two aircraft carriers

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close to Taiwan.\textsuperscript{17} President Clinton had previously upset the Chinese government by holding regular meetings in 1993 and 1994 with the Dalai Lama over the future of Tibet, which China considered to be an improper intrusion in China’s internal affairs.\textsuperscript{18} Deploying two carrier groups next to Taiwan during the crisis alarmed the PLA, and gave them an impression of what to expect, should it come to armed conflict over the future of Taiwan. This event became a turning point in the modernization plans for the PLA, and Chinese military spending increased after the Taiwan crisis.

In 1999, the American led NATO Alliance forced the Serbian Government to withdraw from Kosovo using political coercion, high technology air power and information warfare. The Chinese analyzed the war and took two lessons from it; a military and a political one. The military lesson was that America was able to win an air war against Serbia, a country equipped with a strong and integrated air defense of Russian origin, taking no casualties in the campaign. Western high technology military equipment had proven its superiority once again. The political lesson was that America had demonstrated a willingness to intervene in regional conflicts under what Chinese analysts assessed as merely the pretext of “humanitarian intervention”, meant to shroud the real purpose of extending and consolidating American hegemony and domination. It forced the Chinese to reconsider the late Deng Xiaoping’s pronouncement from 1985 that the threat of war was on the decline, that the global system of power relations was moving towards multi-polarity, and that all countries seek peace and development.\textsuperscript{19} In the white paper on China’s National Defense in 2000, the Chinese Government changed its assessment of the security situation.\textsuperscript{20} In the text they added that “hegemonism and power politics still exist and are developing further. Certain big powers are pursuing neo-interventionism, neo-gunboat policy and neo-economic colonialism”. It goes on to say that “Local wars and armed conflicts have increased again”, and “there are new negative developments in the security situation in the Asia-Pacific region”. China clearly considered the potential implications for the situations in Taiwan, Xinjiang and Tibet, which China considers her own internal affairs of national sovereignty.

The American 2001-2002 war against the Talibain and Al Qaeda in Afghanistan has also been analyzed by the PLA. China was politically unsettled by the American military presence at the Chinese periphery in Afghanistan and Pakistan, and viewed it as a step towards an American encirclement.

of China. With U.S. forces in Afghanistan, only the Russian border to the north is free of American military presence. Militarily, the PLA analysts warned that the Americans would become bogged down in an Afghan quagmire, like the Soviet Union and before them the British. They warned that the Americans would become stuck in a guerrilla war, and that the U.S. fighters and helicopters would be shot down by Stinger missiles, as it had happened to the Soviet forces in the 1980's. Much to their astonishment, this did not happen. The PLA witnessed a display of high technology warfare in support of the Afghan Northern Alliance, which in an overwhelming campaign forced the Taliban back to seek refuge in the mountains and in Pakistan. The PLA analysts noted the key role played by long range strategic bombing using precision-guided-munitions and cruise missiles, integrated with Special Forces and the ever growing importance of real-time Allied intelligence.\textsuperscript{21} Also the importance of AH-64 attack helicopters and AC-130 Gunships was noted.

**Local War under Modern Informationized Conditions**

The 2003 war in Iraq also drew the attention of the PLA, and once again the overwhelming American military might impressed the PLA analysts. They especially highlighted: High technology, information technology, high mobility, ubiquitous intelligence gathering and the relatively small number of ground troops that the Americans deployed. However, the PLA analysts also noted the setbacks suffered by the Americans and their allies due to the insurgency, which focused the PLA on the importance of asymmetrical warfare and the Peoples War; a specialty that China has developed for decades.\textsuperscript{22} Politically, China was very alarmed by the Iraq war. By occupying Iraq, the U.S. military forces had established a firm base in the Middle East, fuelling the Chinese perception of an expansion of American unilateralism - if not neo-imperialism - and the worry that America would turn to Asia next, which created a widely spread sense of urgency for modernizing the PLA.\textsuperscript{23} Before the war, China had signed an agreement with Iraq, in which China had acquired the rights to significant oil reserves in the country, which were to be utilized when the international oil embargo was lifted. However, the U.S. invasion of Iraq rendered the deal worthless, or so it seemed at the time.\textsuperscript{24} China perceived the war in Iraq as U.S. oil-imperialism, and responded by changing its energy policies. She diversi-


\textsuperscript{22} Willy Wo-Lap Lam, “China’s reaction to America’s Imbroglio in Iraq”, China Brief, Vol IV, Issue 8, April 15, 2004, p.2-3.


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fied her sources of oil, and started to import more oil from Africa, South America and Central Asia.\textsuperscript{25} The PLA realized that it had to make further investments to improve its capabilities, and in 2003 it was decided to reduce the PLA by 200,000 men to 2.3 million men. It was mainly the technologically backward ground forces that were reduced, whereas the PLAN, PLAAF and the 2\textsuperscript{nd} Artillery Forces were strengthened.\textsuperscript{26} Until this point in time, the PLA modernization had primarily focused on Mechanization, but the experiences of the U.S. network centric warfare made the PLA realize that there was a widening technology gap between Mechanization and Informationization,\textsuperscript{27} which is the Chinese term for digitalization and networking of its armed forces. Therefore, the PLA decided to change from exclusively focusing on mechanization to advancing both mechanization and informationization simultaneously. The PLA would use mechanization as the foundation, and add Informationization as the driving force that would promote the composite development of the PLA, improving firepower, assault, mobility, protection and information.\textsuperscript{28} Main battle weapon systems would be networked through an information infrastructure to an automated command and control system with an information sharing capability.\textsuperscript{29}

<table>
<thead>
<tr>
<th>Time</th>
<th>Doctrine</th>
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<th>Depth of defense</th>
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</tr>
<tr>
<td>1979-1985</td>
<td>People’s War Under Modern Conditions</td>
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<td>1985-1991</td>
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<td>Informationized – High Tech. Networking main weapon system, automated C4I</td>
</tr>
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Table 1 PLA Doctrinal Development

\textsuperscript{27} Ibid, chapter I, The Security Situation.
In the 2004 White Paper, Informationization became the centre of the modernization program, and was detailed further in the following 2006 White Paper on China’s National Defense, where a long term modernization process was announced. It declared that “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 informationized armed forces and being capable of winning informationized wars by the mid-21st century.” These goals are non-specific and have not been clarified further from official sources. At the March 2008 National People’s Congress in Beijing, President Hu Jintao stated that “we must aim at improving the capability to win high-tech regional wars and keep enhancing the ability of the military to respond to security threats and accomplish a diverse array of military tasks.” Clearly, the modernization program of the PLA is ambitious and will enable China to respond to any future security threats professionally, with a modern and capable force.

**Hu Jintao’s “New Historic Mission”**

In a speech in December 2004, Chairman Hu Jintao introduced a new set of historic missions to the PLA. They are derived from Hu Jintao’s overall ideological guidance on “Scientific Development” for the PLA. They are “The New Historic Missions” otherwise known as the “three provides and one role” and they are defined as follows:

1. Provide an important guarantee of strength for the party to consolidate its ruling position.
2. Provide a strong security guarantee for safeguarding the period of important strategic opportunity for national development.
3. Provide a powerful strategic support for safeguarding national interests.
4. Play an important role in safeguarding world peace and promoting common development.

To understand the significance of these, they must be set in a historical context. The previous guidance from Deng Xiaoping called for national defense, resisting aggression and protecting the motherland, protecting the peaceful labor of the people and participating in national construction. After him, Jiang Zemin further added that the ground force must be a powerful and forceful guarantee for national security, unification and socialist modernist drive. These tasks were exclusively internal, fo-
cused on creating internal stability within China, thereby creating a foundation for economic development, which was the primary objective.

The first two “provides” in Hu Jintao’s guidance to the PLA are in many respects similar to the guidance given by Deng Xiaoping and Jiang Zemin, focusing on securing the rule of the party and safeguarding strategic national development, which aims at securing internal stability in China. The third “provide” is the “New” part of the “Historic Mission.” Here, the PLA is tasked to “provide a powerful strategic support for safeguarding national interests.” It is beyond the scope of this paper to determine the future national interests\(^{33}\) of China. However, they are likely to reflect China’s global interdependence created in the last three decades, borne from China’s industrialization and global trade. The national interests are also likely to reflect the increasingly industrialized China’s dependence on import of minerals, raw materials, oil and gas, which are fundamental to maintaining a growing Chinese economy and the internal stability of the country. The Chinese white paper on “Chinas’ National Defense in 2008” addressed these issues as follows:

“World peace and development are faced with multiple difficulties and challenges. Struggles for strategic resources, strategic locations and strategic dominance have intensified. Meanwhile, hegemonism and power politics still exist, regional turmoil keeps spilling over, hot-spot issues are increasing, and local conflicts and wars keep emerging.” It goes on to say:

“The influence of military security factors on international relations is mounting. Driven by competition in overall national strength and the development of science and technology, international military competition is becoming increasingly intense, and the worldwide revolution in military affairs (RMA) is reaching a new stage of development. Some major powers are realigning their security and military strategies, increasing their defense investment, speeding up the transformation of armed forces, and developing advanced military technology, weapons and equipment. Strategic nuclear forces, military astronautics, missile defense systems, and global and battlefield reconnaissance and surveillance have become top priorities in their efforts to strengthen armed forces. Some developing countries are also actively seeking to acquire advanced weapons and equipment to increase their military power. All countries are attaching more importance to supporting diplomatic struggles with military means. As a result, arms races in some regions are heating up, posing grave challenges to the international arms control and nonproliferation regime.”\(^{34}\)

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33) For an interesting analysis of China’s national interests read Dr. Yan Xuetong “Analysis of China’s National Interests”, published as a web book on the internet February 2006. Analysis of China’s National Interests is an important book for observers of Chinese politics. Not only did the book receive awards and prizes in China, it is now being used as a textbook in several institutions such as the National Defense University. (http://rwxy.tsinghua.edu.cn/xi-suo/institute/english/production/yxt/interests%20analysis.htm).

The white paper does not specify which countries China is concerned about, but the inclusion of these observations in a white paper for the future development of China’s defense is an indication of how China views the world, and the challenges the PLA must be prepared to handle. When Hu Jintao asked the PLA to “Provide a powerful strategic support for safeguarding national interests”, he asked the PLA to modernize in such a way that it is prepared to cope with international issues of power. The Chinese economy is a part of the global economy and Chinese national interests will increasingly become dependent on global affairs. The refocusing of the PLA towards an international role will cause a change of paradigm for the PLA. China has historically been a continental state with a large ground force and only a coastal navy with no blue water capability. For the PLA to safeguard national interest abroad, it will be necessary for the PLA to be able to project power abroad, which first of all means that China must have an effective blue water navy with at least 3 carrier groups.\(^{35}\) To build, develop and train these to an effective combat level will take 20-30 years. If China in the time to come, as a great power, is to assert its political influence at the level that the U.S. does today, then China will require an expeditionary ground force and air force as well. This will require very large investments in the PLA. A precondition for a successful change of paradigm from a continental power to a maritime power is that the Chinese mainland is not under threat. China needs security on its borders, as this will enable China to reallocate defense funds from continental security to expeditionary capabilities. In the following, China’s strategic issues of concern will be discussed.

**China’s Strategic Issues of Concern**

**Continental Security**

China has been working towards securing the Chinese mainland from potential conflicts with its continental neighbors, and out of a total of 14 neighboring countries, China only has issues with two. In 2009, China and Vietnam agreed on a demarcation of the border,\(^{36}\) and in 2008 China agreed on the demarcation of the border with Russia.\(^{37}\) Together with an agreement of a Sino-Russian strategic

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partnership and expanded military cooperation,\textsuperscript{38} this will contribute to securing the Chinese borders. Membership of the Shanghai Cooperation Organization (SCO) has fostered agreements on border issues between the member countries, which have increased China’s continental security. However, China’s continental borders are not secure all the way. China has had a dispute over the border demarcation with India since the Sino-Indian war in 1962, and China also has a dispute with the small state of Bhutan, which is sandwiched between China and India, though there are presently no tensions in the relations between the two countries.\textsuperscript{39} A separate strategic issue is China’s plans for the use of water for hydroelectric power, which will have vast economical and ecological consequences for India, Bangladesh, Myanmar, Laos, Thailand, Cambodia and Vietnam.

\textbf{Indian Border Issues}

Historically, the borders between India and China have never been formally stipulated. The borders have appeared naturally as a result of time, as they were accepted by the local population. However, British colonial rule in India changed this. In 1913-14, the Simla Convention, chaired by the British Foreign Secretary Henry McMahon, made an attempt to settle the borders between China, India and Tibet. The conference ended up proposing a delineation of the border along what would become known as the McMahon Line. The agreement was signed by India, Tibet and the United Kingdom, but not by China. The British Government of that time was attempting to undermine Chinese sovereignty over Tibet in general, and specifically to undermine the authority of Chinese officials within Tibet. Therefore, China refused to sign the Simla Convention.\textsuperscript{40} China and India went to war over the border issue in 1962, but the war did not provide a resolution to the issues between the states, and the disagreement is ongoing. In 1981, China and India opened negotiations on delimitation of the border, but to this day no final agreement has been reached. The two nations meet regularly, and confidence building measures have been implemented to lower the risk of accidental fighting across the border.\textsuperscript{41}

\textsuperscript{38} Times Online, “Russia and China Announce New Era of Military Cooperation”, 29 April 2009, (http://www.timesonline.co.uk/tol/news/world/europe/article6188506.ece).
\textsuperscript{40} Nirmal C. Sinha, “The Simla Convention: A Chinese Puzzle”, Presidency College Magazine; Diamond Jubilee Number (Calcutta 1974).
\textsuperscript{41} Brahma Chellaney, “Will India-China Border Talks Ever End?”, The Japan Times Online, 3 July 2006, (http://search.japantimes.co.jp/cgi-bin/eo20060703bc.html).
In India, there is a perception of a growing Chinese influence on India’s neighbors Pakistan, Nepal, Myanmar and lately Sri Lanka, with all of whom India has strained relations. In addition, the Chinese navy has shown its presence in the Indian Ocean. For all of these reasons there is an increasing awareness in India of China’s geostrategic presence in its neighborhood. India has begun a gradual

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re-militarization of its border to China, due to what India perceives as an imbalance in forces. India has re-activated and improved nine airfields to operate combat and transport aircraft at the eastern Arunachal Pradesh border region, and plans to permanently deploy two squadrons of the advanced Su-30MKI multirole fighter to Tezpur Air Base in the region. The Indian army will be boosted with two mountain infantry divisions of 50-60,000 troops over the coming two years. There have been no reports on any Chinese troop deployments to the region, but India accuses Chinese border patrols of making “creeping incursions” across the border. Indian newspapers have reported that China has built several launch pads for nuclear tipped ballistic missiles in Delingha, Tibet. Delingha is one of five locations in the region north of the Sino-Indian border, where China has deployed between 10 and 20 DF-4 Intercontinental Ballistic Missiles with a range over 3,400 km. From this location DF-4 missiles are capable of striking targets in four countries – Nepal, Pakistan, Myanmar and India, and China have close positive relations with the first three. Over the past five years, the Indian defense budget has increased by 37%, and much to the concern of China, the U.S. – Indian relations have warmed in recent years, peaking in October 2008, when the U.S. Congress approved an agreement facilitating nuclear corporation between the U.S. and India, and in January 2009 there were reports of early talks between India and the U.S. about technical assistance to the Indian Ballistic Missile Defense program. This program is of great concern to China, as it could undermine the credibility of China’s nuclear deterrence strategy. China interprets these actions as being directed against China,

a notion that may have been worsened when the U.S. Secretary of State Hillary Clinton in June 2009 stated that she would work for a “dramatic expansion” of India-U.S. ties.  

River Water for Hydroelectric Power

More than a quarter of China is classified as desert. The northern and north western parts of China are water scarce, and China wishes to divert water to these areas for human use, such as farming and industry. The diversion will also serve a major hydroelectric power project, which is expected to generate 40,000 megawatts of power. Sections of the Yellow River have run dry, and by diverting water from the rivers of Tibet to the Yellow River, China can improve this situation. China has three major water diversion projects, but the most controversial is the diversion of the Yalong Tsangpo River. The waters of the Yalong Tsangpo come from the melting ice in the mountains of Tibet, and the river flows through southern Tibet for a distance of about 1,600 kilometers. At its easternmost point it makes a U-turn just before it enters India. Here, it is joined by two other major rivers. From this point it is known as the Brahmaputra River. It runs through India and snakes into Bangladesh, where it is joined by the Ganges River to create its largest delta, before emptying into the Bay of Bengal. A diversion would affect millions of people downstream in India and Bangladesh. The water level in the Brahmaputra would fall significantly, which would impact agriculture as well as fishing. The salinity of the water would increase, as would the silting in the downstream area. China and India do not have a water sharing treaty, and the issue is of great concern to India and Bangladesh. It has the potential for causing a conflict between the states, considering the significant consequences the project would have to millions of people.

Similarly, China is building dams along the Mekong River which flows into Myanmar, Laos, Thailand, Cambodia and Vietnam. By 2004, China had built two dams, was constructing another two, and had plans to build a further four to generate hydropower. The building of the dams seems to affect the water levels in the Lower Mekong Basin, where reports detail that the water level of the river is at an all time low, which will affect the livelihood of millions of people in the Lower Mekong Basin.

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Domestic Security

Domestic security is of great concern to the CPC. Hu Jintao’s first two “provides” of the “new historic mission” task the PLA first of all with consolidating and protecting the rule of the CPC, and secondly with safeguarding continued economic development, which in essence means that the PLA is to maintain law and order, should the People’s Armed Police (PAP) fail. The issue of domestic control has become increasingly concerning to the CPC during the economic downturn, which may well cause an increase in public uprisings, due to rising unemployment and the lack of social security. Maintaining social stability in the western provinces of Xinjiang and Tibet is a great concern for the Chinese government.

In Tibet, the indigenous population desires increased autonomy, but not independence, which is denied by the Chinese government. The Tibetans are guided by the Tibetan religious leader, the Dalai Lama, who lives in exile in India. China and India must balance the issues of Tibet carefully, in order to avoid escalating the Tibetan issue to a bilateral issue between India and China.

The Xinjiang region is important to China not only because of sovereignty, but also because the province holds major oil reserves. One of the biggest oil reservoirs in China is the Tarim oil basin, which produces 20 million tons of crude oil equivalents per year. This area is planned to become a major gas supplier to Chinese consumers in the future, with an expected production of 20 billion cubic meters of gas per year for 30 years. This area is therefore of major strategic importance to China. To the north of the Tarim basin is the Junggar Basin in the Dzungaria region, which also holds large oil reserves. The Beijing rule of the Xinjiang region is challenged by the East Turkestan Independence Movement, which seeks an independent, self-governing Xinjiang. There are also a number of Muslim religious movements in the region who object to Chinese rule. In their efforts to find support for their war against Beijing, the independence movements have sought contact with fellow Muslim supporters in both Pakistan and Afghanistan. China therefore seeks to cooperate with Afghanistan and Pakistan on the activities across their mutual border. Both Afghanistan and Pakistan are involved in America’s and NATO’s war on the Taliban, and the new Afghanistan-Pakistan (AFPAK) campaign launched by the American administration is of strategic interest to China, as it will bring thousands of American and NATO soldiers into Afghanistan. The AFPAK campaign is likely to forge a closer relationship between the U.S. and Pakistan; historically a close friend of China. However, there is no threat to the Chinese borders, and the main Chinese concern in the Xinjiang province is domestic security, which the PLA is to safeguard.

None of the continental issues of concern existentially threaten the sovereignty of China, especially after the improvement of the Sino-Russian relationship. Even though India and China are strug-

gling to find a solution to their issues, there are no indications of threats to the Chinese mainland that would be a major cause for concern at this moment in time. Because of this, China may find she has a strategic opportunity to turn her attention to maritime issues of concern.

**Maritime Issues of Concern**

China has maritime concerns regarding sovereignty and also the access to natural resources in both the South China Sea and East China Sea. In addition, there is a perception in China that it is essential to secure the sea lines of communication for the important import and export of trade goods, particularly the vital import of oil to China.

**South China Sea**

All the countries around the South China Sea perceive the South China Sea as an important source of income from fishing, and they are all eager to explore its potential oil and gas reserves. Several states have overlapping territorial claims over the South China Sea, and disagreements about the Exclusive Economic Zones (EEZ) have led to several states occupying islands in the area, without explicitly laying legal claim to the islands in question, hoping that a de facto presence will become de jure over time. This has raised tension with competitors when occupation happens unannounced, leading to naval battles, diplomatic protests and arrests of fishermen operating in the disputed area.\(^{58}\) The stakes are high: a U.S. geological survey estimated that there could be a total of discovered and undiscovered resources of up to 28bn barrels of oil, whereas Chinese estimates for the same area ranges from 105bn to as much as 213bn barrels of oil. Most of the finds in the South China Sea are gas, and China estimates that there could be as much as 900 trillion cubic feet of gas in the area.\(^{59}\) There are two main groups of islands that are at the centre of the dispute; the Paracel Islands and the Spratly Islands.

The Geneva Accord gave the administrative rights over the Paracel Islands to South Vietnam in 1954, when the French colonial rule over Vietnam came to an end. China had not been a party to the accord, and it contested the decision, reiterating a long standing Chinese claim to the islands. In 1974, when South Vietnam was about to lose the Vietnam war, China occupied the Paracel Islands after a short battle. North Vietnam protested against the occupation, and still lays claim to the


islands. There have been several skirmishes in the area since then, most recently in July 2007, when a Chinese naval patrol opened fire on a Vietnamese fishing boat, killing one sailor. China is reinforcing her presence on the Paracel Islands, and has been building military infrastructure on Woody Island, comprising a garrison, a naval harbor and an airport with a 2,500m runway that can handle landings by transport aircraft as well as the PLAAF and PLANAF third generation combat aircraft, such as SU-27 and SU-30. This airport could become very important in case of a military crisis in the South China Sea, as it will enable the PLAAF to refuel its fighters without having to transit back to the mainland.

Figure 2: Runway build on Woody Island, Paracel Islands in the South China Sea.

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The Spratly Islands are located in the southern part of the South China Sea. They consist of more than 100 small islands and coral reefs, which are scattered over an area of 800,000 km². In 1988, China and Vietnam occupied several of the islands, but when China established an observation post on the Johnson Reef, which the Vietnamese deemed important, the Vietnamese tried to eject the Chinese by force. The ensuing battle between Chinese and Vietnamese forces resulted in the sinking of two Vietnamese navy vessels, while a third was set on fire. 70 sailors died. Since then, more clashes have occurred between naval units from China, Vietnam, the Philippines, Taiwan and Malaysia, and there have been several shooting episodes on fishermen in the area. 62 45 of the Islands are today occupied by China, Malaysia, the Philippines, Taiwan and Vietnam. 63

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China claims all of the Spratly Islands and occupies several of them. The Philippines claims a sizable portion of the South China Sea, and occupies eight of the islands, whereas Vietnam claims all of the islands and occupies twenty of them. Vietnam has built a 1,300m runway on Thitu Island capable of handling transport aircraft, and has a permanent military detachment of 100 solders posted there.

Figure 4: Vietnamese airstrip on Thitu Island, South China Sea.

Taiwan is also active in asserting her presence on the islands. On 21 January 2008, a military C-130 transport plane from Taiwan landed on a newly constructed runway on the island of Taiping, which is one of the Spratly Islands.67

Excessive exploitation costs for deep water drilling have limited the incentive to resolve the dispute, but increasing oil prices and a steadily increasing requirement for more oil has led to various initiatives to resolve the disagreements. Tensions eased in 2005, when China, the Philippines, and Vietnam agreed on a Joint Maritime Seismic Undertaking (JMSU), which would survey the sea around the Spratly Islands for oil and gas. The agreement was supported by vast Chinese investments in infrastructure on the Philippines that supported the stagnant economy. However, the Philippine government encountered heavy domestic criticism over the arrangement with allegations of corruption in the distribution of Chinese aid, and that the government violated the constitution when agreeing to the JMSU.68 Vietnam reluctantly agreed to the JMSU, but it was without significant consequences, as it did not survey Vietnamese claimed areas. Vietnam would like to move the process beyond seismic surveys and initiate drilling on its own. In 2007, Vietnam agreed with the energy company British Petroleum (BP) on the development of two gas fields in the South China Sea 230 miles of the coast of Vietnam, but Chinese protests made BP withdraw from the agreement.69 In 2008, Vietnam entered a similar agreement in the South China Sea with the American oil company Exxon Mobil. However, this has also encountered strong Chinese protests, and considering Exxon’s significant interests in the Chinese energy market, it is questionable whether the company will carry out the project.70 The reason is that the China’s Offshore Oil Explorer Company (CNOOC) intends to step up its deepwater exploration in the South China Sea, and plans to invest $29bn over the next decade. CNOOC does not have the technology for deepwater drilling, and is likely to team up with western oil companies, such as BP, Total, Shell or Chevron.71 China’s future strategic influence and abundance of finances have seemingly moved the western companies towards being inclined to withdrawing from supporting the smaller nations; not wanting to risk future cooperation with China. But this does not mean that China can start drilling as she wants.

On 27 January 2009 and 2 February 2009, the Philippines Senate and House of Representatives

signed Senate bill 2699 and House bill 3216, laying claim to parts of the Spratly Islands. This led to Chinese protests and a reiteration of Chinese sovereignty claims over the Islands. However, in March the Philippines President Arroyo signed Republic Act 9522, known as the Philippine Baseline Act, which defines Philippine territorial waters and maintains the country’s claim over the disputed Spratly Islands. In May 2009, the Philippines forwarded a partial submission of data and information to the UN Commission on the Limits of the Continental Shelf (CLCS). Malaysia and Vietnam followed suit with a joint submission with their coordinated claims. This caused Chinese protests, and China dispatched a retired navy destroyer, converted to a fishery patrol vessel, to patrol the sea around the islands in the South China Sea. In response to the Vietnamese action, China forwarded a letter to the UN CLCS urging it not to consider the submissions from Malaysia, Vietnam and the Philippines in accordance with Article 5(a) of Annex I to the Rules and Procedures of the UN CLCS, which stipulates that “in cases where a land or maritime dispute exists, the Commission shall not consider and qualify a submission made by any of the States concerned in the dispute”. China claims indisputable sovereignty over the Islands in the South China Sea and the adjacent waters, including Xisha and Nansha Islands. At the same time, China submitted 'initial information on the outer limits of the continental shelf beyond 200 nautical miles’ to the UN and China pledged to resolve the issue through peaceful negotiations. The Vietnamese submission to the UN Commission on the Limits of Continental Shelf would internationalize the delimitation of the borders of the South China Sea, and the review would be based on scientific facts, which would have been to the advantage of the small powers of the South China Sea. China on the other hand, being a great regional

power, is seeking a negotiated solution, but is finding it hard to get the parties back to the negotiation table.

In June 2009, the Chinese oil company Sinopec announced that it is planning its first deepwater well in the South China Sea, ending a moratorium on exploration in waters close to acreage disputed by Vietnam. Sinopec has begun a 3D seismic survey in an area of 1,250 square kilometers in the Qiongdongnan basin, and drilling of the best prospects will follow. Sinopec has a license to explore more than 8,000 square kilometers in the Qiongdongnan basin, including some blocks in territorial waters claimed by Vietnam. However, the planned 3D survey will be conducted in an undisputed area. An earlier 2D seismic survey across the entire 8,000 sq km showed a potential resource of 800 billion cubic meters of natural gas. If gas is found in the area this could become one of the biggest offshore reserves in China. However, if gas is found, then Vietnam will also be all the more firm in her claims to the disputed area, which is likely to raise tensions in the South China Sea.

**East China Sea**

The East China Sea is an area of 1.2 million km² with several large oil and natural gas deposits. Japan and China both seek to claim the resources for themselves. Taiwan is claiming them as well, but has not been as active in its claims as China and Japan. Japan has almost no domestic oil or gas reserves, so for Japan these potential resources have great strategic importance. The East China Sea disagreement has two components. First, the countries disagree on the determination of the Exclusive Economic Zone (EEZ) in the East China Sea, and secondly, China, Taiwan and Japan disagree on the rights to the Diaoyutai/Senkaku Islands, which are believed to have large oil and gas reserves. Tensions have arisen regularly between the two countries over territorial issues, such as in 2004, when Chinese submarines entered Japanese territorial waters, and there have also been instances of Japanese naval vessels firing at Chinese fishermen violating Japan’s self-proclaimed fishing rights around the Diaoyutai/Senkaku Islands. Fishing in disputed waters has often caused tension between the countries, and to defuse the situation, the Chinese State Council has banned Chinese fishing vessels from entering “sensitive maritime areas”. However, Chinese maritime vessels still

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patrol the waters around the islands, which causes continued
tension.\textsuperscript{85} On 8 December 2008, two Chinese survey ships
were seen inside what Japan claims is Japan’s territorial wa-
ters, causing then Prime Minister Taro Aso to claim territorial
rights in two different speeches and delaying a planned visit to
China.\textsuperscript{86}

The overlapping area of the EEZ that is claimed by both Chi-
na and Japan is assessed to hold 20m barrels of oil and 363b
cubic feet of gas.\textsuperscript{87} Mediation efforts have been ongoing since
2004 in an attempt to reach an agreement, but no results have
been reached thus far. In June 2008, both countries entered
an agreement on joint exploration in a part of the contested
area, sidestepping the delimitation issue. A formal treaty is still
to be signed, and there is no agreement as to who will have the
right to the hydrocarbons that may be found.\textsuperscript{88}

\textit{Figure 5: Territorial claims by Japan and China in the East
China Sea.\textsuperscript{89}}

### Strategic Sea Lines of Communications

The vast majority of trade to and from China transits by sea. As China’s economy grows, she will
become increasingly dependent on free sea lines of communication from the Western countries,
South America, the Middle East and Africa. More than 80\% of China’s imports of crude oil are
transported by ship through the Strait of Malacca, and Chinese leaders are becoming more aware
of the importance of the strait, which they perceive as a strategic vulnerability. In 2003, the Chinese

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President Hu Jintao declared that “certain major powers were bent on controlling the strait and called for the adoption of new strategies to mitigate the perceived vulnerability”.90

Following this, the Chinese media devoted considerable attention to the country’s “Malacca Dilemma,” leading one newspaper to declare: “It is no exaggeration to say that whoever controls the Strait of Malacca will also have a stranglehold on the energy route to China.”92 Whether this

92) Ibid. p. 4.
vulnerability is real is hard to say. If any nation was to block the Strait of Malacca, it would have global financial repercussions, as all trade to Europe, Africa and the Middle East is transferred through there as well. Japan, who has no oil reserves, is equally dependent on importing oil through the Strait of Malacca, and therefore has the same vulnerability as China. The important issue is that there is a general perception of maritime vulnerability in China, and it is being used to argue for the development of a blue water navy in China. Proponents for a blue water navy in China have also received a helping hand from poor people in Somalia, who have increasingly turned to piracy, targeting merchant vessels and cruise ships off the coast of Africa to ransom for money. More than 20 countries around the world have currently deployed naval vessels to secure the shipping lanes and combat the pirates. The efforts have, so far, not stopped the pirates, and also Chinese ships have been hijacked. The anti-piracy operation has now become an international operation with representation from all the great maritime powers including the U.S., NATO, the European Union, Russia, India and Japan. For China, it has therefore also been an issue of signaling its future status as a great maritime power, and of demonstrating the will and ability to protect its national interests in the waters off Africa. Every year, more than 1000 Chinese commercial vessels pass the waters off Somalia, and 20% of the ships have either been hijacked or have been under threat of this.93 To ensure the safe transit of its commercial vessel traffic, China deployed its first operational detachment on the 26th December 2008, consisting of two destroyers and a replenishment ship, to participate in the international operation against piracy outside Somalia.94 The first detachment was deployed for four months. It has since then been replaced by a second95 and a third96 detachment. China has stated that the anti-piracy operation will not be a short term mission.97 This is the first Chinese maritime operation outside Chinese waters in 600 years, and it is likely that it will be a turning point for the Chinese Navy, in the sense that she will conduct more missions in waters far away from the shores of China. China is conscious of the concern this mission may cause internationally, which is why the Chinese government made an effort to ensure legitimacy for the operation. First of all, the PLAN did not deploy until there was a mandate in the form of UN Security

Council Resolution 1851/08. Secondly, there was an official invitation from the government of Somalia, and lastly, there was significant public support for the mission in the Chinese population.

**Taiwan**

At the end of the Chinese civil war in 1949, Kuomintang Nationalist forces under the leadership of Chang Kai-shek escaped to Taiwan, then known as Formosa. Since then, there has been a dispute as to who is the rightful ruler of China. China claims sovereignty over Taiwan, but on the island there are significant forces working for independence. China’s biggest potential crisis area is the dispute with Taiwan. China is very determined to prevent Taiwanese independence, and has made significant preparations for military action, should Taiwan attempt to move in this direction. Important for this issue is the U.S.-Taiwan Relations Act of 1979, which by many is seen as a security guarantee to Taiwan in the event of a Chinese attack. During the third Taiwan crisis in 1995-96, where China demonstrated its willingness to use military force, the U.S. sailed two carrier groups close to Taiwan and thereby let China understand that it would not stand by passively if China were to attack Taiwan.

China has taken this threat seriously, and has been acquiring military capabilities that could deny the U.S. Navy access to the sea around Taiwan. The PLA has also acquired amphibious landing capabilities for an invasion of Taiwan. Politically, the relations between China and Taiwan have been very strained, such as in 2005 when the Chinese National People’s Congress adopted the Anti-Secession Law, which legally obliges China, as a last resort, to use force in order to avoid Taiwanese independence. The thrust of the PLA modernization has been focused on a potential future conflict over Taiwan. To prepare for this conflict, the PLA has acquired a large number of combat fighters, submarines and destroyers equipped with anti-ship missiles and surface to air missiles. To support these elements, China has launched a number of surveillance and communication satellites. A potential future Taiwan conflict has been the main focus for the PLA for many years, but this may change in the future. In March 2008, the Taiwanese population elected Ma Ying-Jeou as president, and he

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has pursued a much more conciliatory policy towards China, which has led to a lowering of tensions between the two parties. Negotiations have led to the establishment of direct flights between Taiwan and mainland China, and at the National People’s Congress in March 2009, the Chinese Premier Wen Jiabao said that China was “ready to create conditions for ending the state of hostility and concluding a peace agreement between the two sides of the Taiwan Straits.”\footnote{Times Online, “China Ready to Talk to Taiwan”, 5 March 2009, (http://www.timesonline.co.uk/tol/news/world/asia/article5849206.ece).} This is important for two reasons. First of all, it could be the beginning of a peaceful process that will lead to an agreement between the two parties. Secondly, with a continuation of the positive peace process between Taiwan and China, the PLA will find itself in a situation, where it can no longer justify the preparations for a future Taiwan conflict as the basis for the modernization process. The Chinese government and the PLA are therefore likely to reassess the development strategy of the PLA, and may decide to reorientate the development of the PLA towards other strategic concerns.

With the continental issues of concern not posing existential threats to China’s sovereignty, and the issue of Taiwan becoming a political problem with less chance of a military solution, China and the PLA have a historic window of opportunity to reorient the military strategic focus from being a continental power towards becoming a maritime power. By creating a strong blue water navy, China will acquire a military force that can safeguard her national interests at sea.

**China’s Strategic Culture**

If you ask a Chinese about China’s use for military force, he will most likely tell you that China is a defensively-minded, peace loving nation, and he would firmly believe it. And yet; over the course of the past 5000 years of Chinese history, there have been more than 6000 minor or major wars fought in China. A majority of the wars have been fought for the unification of China, and a number of them have been border wars against foreign states and foreign invaders of China.\footnote{Lieutenant General Li Jijun, “Traditional Military Thinking and the Defensive Strategy of China”, a speech at the U.S. War College, 29 August 1997, (http://www.fas.org/nuke/guide/china/doctrine/china-li.pdf), p.2.} How does this seeming propensity to use force coincide with a defensive, conflict-averse culture? Andrew Scobell posits that China has a dualistic defensive culture, which at the same time is shaped by a Confucian conflict-averse, defensively minded culture, and at the same time by a Realpolitik one that favors military solutions and is offensively oriented.\footnote{For a detailed study of China’s strategic culture read Andrew Scobell, “China’s Use of Military Force; Beyond the Great Wall and the Long March”, Cambridge University Press, 2003, pp. 15-39.} Andrew Scobell has dubbed this the “Chinese Cult of Defense.” Both cultures are active, and both influence and combine in a dialectic fashion. The core element of the Confucian belief, is that the Chinese are a peace-loving people, they are not
aggressive or expansionist and they only use force in self-defense. It is a firmly held belief among elite circles that peace is precious, and that China is a peace-loving nation, something which is stressed in many official documents and statements. It is also firmly believed that China has never been an aggressive or expansionist state, and that China will never seek hegemony. A central tenet in the Chinese culture of defense is that If Someone Doesn’t Attack Us, We Won’t Attack Them. How does China motivate and justify use of military force, which is not an infrequent event, especially if internal, domestic use of force is taken into account? First of all, national unification and territorial integrity is a core value in China’s national security perception and no compromise is possible. This is essential in understanding China’s use of force and how she justifies it. Any threat to national unification or territorial integrity will be met forcefully, whether it is internal or external. When it comes to territorial integrity, this depends on the Chinese interpretation of her legitimate territory, as it was the case in the border war with India (1962), and with the Soviet Union (1969).\textsuperscript{106} This is essential when assessing Chinese politics in the context of Taiwan, or its ongoing territorial disputes in the South China Sea, East China Sea or border delineation with India. This does’ not, however, mean that China is always aggressive. China persistently seeks peaceful resolution on these issues as a first priority. China has had ongoing negotiations with India for 27 years regarding a border settlement, and in spite of there being no agreement in sight, it is a testimony of both countries’ desire for a peaceful resolution.\textsuperscript{107} After years of negotiation, China and Vietnam in February 2009 agreed on the demarcation of their land border,\textsuperscript{108} and in July 2008 China and Russia reached an agreement on the demarcation of the eastern part of their border, after several years of negotiations.\textsuperscript{109}

Another characteristic of China’s political and military leaders is that they have a Heightened Threat Perception and see threats everywhere. They see threats to the party, threats to the state, threats to internal stability, etc. This is a tendency which should not be ignored. In the view of PRC leaders, the greatest danger to the regime exists when there is collaboration between internal and external forces, which may explain the regime’s crackdown on the demonstrations at the Tiananmen Square in 1989, and also the handling of riots in Tibet in 2008.

When it comes to Just War Theory, China’s traditional distinction between “good wars” and “bad wars” is that good wars are wars in which China participates, which is linked to the Chinese view that

\textsuperscript{107} Brahma Chellaney, “Will India-China Border Talks Ever End?” The Japan Times Online, 3 July 2006, (http://search.japantimes.co.jp/cgi-bin/eo20060703bc.html).
Chapter 2

China always wages war for defensive purposes. The guiding principle for military action is Active Defense, which is described in further detail below.

Chinese strategic culture ascribes great importance to internal stability, and in particular to the survival of the Chinese Communist Party. Any sign of unrest is dealt with swiftly. Linked with this is that interests of the community are considered paramount, and stand above the interests of the individual.

The combined effect of the above mentioned cultural characteristics is the “Chinese Cult of Defense”; a dualistic culture in which the Chinese perceive themselves as being defensively minded and pacifist, and on the other hand, if necessary, assertively protect and promote China’s national interests right up to engaging in acts of war, and all military moves are thus rationalized as being self defense.

**PRC use of Military Force as a Political Tool**

When dealing with China in a crisis situation, it is essential to understand the Chinese way of using military force in a political context. The Chinese war culture is based on a 2000 year old tradition of philosophical and military writings, and views war and diplomacy in comprehensive and dialectic ways.\(^{110}\) The Chinese leadership sees the use of military force as a part of diplomacy, and there are many examples of the Chinese leadership either using military power to send political or diplomatic messages, or inversely restricting the use of military force to avoid unnecessary escalation. Detecting and understanding this political signaling can be important for the development of a crisis. In the following examples it is demonstrated how China in recent military encounters has carefully tried first to avoid the crisis and when that failed, how they have then used military force and diplomatic initiatives in a combined strategy.

**1950-53 Korea**

North Korea did not consult China before attacking South Korea on 25 June 1950. China followed the development of the war closely, especially the intervention by the U.S. led forces under the UN flag. After the overwhelming success of the Inchon landing, the American led forces continued north across the thirty-eighth parallel towards the Yalu River. China felt threatened by the significant U.S. presence close to its borders, and Beijing issued public warnings, and specifically issued three warnings to the U.S. Initially, Beijing warned the Americans against crossing the thirty-eighth parallel. The

warning did not deter the Americans from doing so. China then warned the U.S. against occupying Pyongyang, which the Americans also ignored. Finally, Beijing warned against closing in on the Yalu River at the Sino-Korean border, threatening the security of China. China prepared for war. China made statements to the United Nations and mobilized the population to “Resist America, Aid Korea” slogans, giving China ample reason to believe that the U.S. were aware of China’s position. The decision to go to war did not come easy in Beijing. War with the mightiest power in the world armed with nuclear weapons was a risky thing to do, and there was much opposition among civilian and military leaders in China. But Chairman Mao was the supreme leader, and he was the key decision maker when the decision was made to send troops. Mao greatly exaggerated the threat not only from U.S. forces in Korea, but also by referring to threats from U.S. forces supporting Chiang Kai-shek’s forces on Taiwan, and the U.S. supporting the French in North Vietnam. Once the decision was made to attack in Korea, China took the initiative and pre-empted a UN advance to the Yalu River. The PLA deployed forces to the Korean border at night to achieve tactical surprise. They caught the UN forces unprepared and forced them to retreat back to the thirty-eighth parallel. The fighting was intense, but both parties took steps to manage the risk and avoid escalation beyond control. In the air war over Korea, the Chinese leaders had noticed that the American led UN forces avoided attacking the PLAAF bases north of the Yalu River, in order to limit the war. Chinese leaders reciprocated, and in spring 1951 the PLAAF air operations were confined to defense, and the PLAAF were refused permission to attack south of the thirty-eighth parallel, providing the UN forces with a safe haven, equivalent to the Chinese safe haven north of the Yalu River.

1954-55 Off Shore Island Crisis with Taiwan
When the Korean War was over, hostilities with the Nationalists at Taiwan re-surfaced. The Nationalists possessed several islands close to the mainland, and they even had air superiority over Fujian and the eastern Guangdong province on the mainland. The PRC initiated operations by seizing several of the islands, and recent Chinese publications suggest that the CPC leadership regarded air

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bombardment of the offshore islands as one effective mechanism for voicing Beijing’s determination to liberate Taiwan.\textsuperscript{115} But great care was taken to avoid hitting U.S. forces, exclusively targeting the Nationalist forces. In 1954, Chiang Kai-shek, the leader of the Nationalists, pressed the U.S. for a U.S.-Taiwan defense treaty, and Mao decided to use military force to put pressure on the U.S. to make them not sign a treaty. The PLAAF began a punishing bombardment of Nationalist forces on Jinmen and Dachen Island. However, as U.S. naval forces approached Dachen Island, the PLAAF had to cease bombing on Dachen, avoiding engagement with U.S. ships and aircraft. President Eisenhower was faced with a situation where he would suffer a domestic humiliation if he gave way to Chinese military pressure, so he signed the treaty with Taiwan. Taiwanese forces withdrew from Dachen Island, which was subsequently taken by the PLA. China gained a tactical victory occupying the island, but suffered a strategic defeat due to the U.S. signing the defense treaty offering Taiwan protection.\textsuperscript{116}

1962 India

The McMahon line of separation between India and China that was negotiated in 1914 was never used as the actual line of separation, since China refused to accept it.\textsuperscript{117} The dispute over the border was laid to rest during the World War I and during the ensuing internal conflict in China. India found this unsatisfactory. In 1950, India resurfaced the claim that the border between China and India should be in accordance with the McMahon Line. At that time, China had just finished an exhausting civil war, and the PLA had not yet manned the entire border. India took advantage of the situation, and the Indian army marched north occupying the Tawang Tract on the eastern part of the border, but without crossing the McMahon Line. In 1953, Indian forces pushed north on other parts of the border to the McMahon Line. In doing so, India occupied 90,000 square kilometers of territory that was claimed by Tibet, and not acknowledged by China. After 1950, China gradually moved several ground force divisions to the Tibet region, which meant that China had acclimatized, experienced combat forces in the region. Zhou Enlai, the Chinese Premier, sought to avoid war through diplomacy. Zhou wrote in a letter to the Indian Prime Minister Nehru that China would agree to 125,000 square kilometers of the disputed territory in the eastern sector going to India, but that the territory of the Aksai Chin, on the north western part of the border, where China had constructed a major road

\textsuperscript{115} Ibid, p. 280.
between Xinjiang and Tibet, should remain under Chinese control. India refused the proposal, and in August 1959, Indian troops crossed into Chinese territory and fighting erupted. After two clashes, the Chinese government took the initiative and sought a diplomatic solution through dialogue, proposing an immediate withdrawal on both sides. India did not respond. From April 1961, India regularly dispatched patrols into what China viewed as its territory. Indian troops kept penetrating into Chinese-claimed territory. Delhi had embarked on a slow process of occupation bit by bit of the entire Aksia Chin. The PLA forces showed considerable restraint, and ordered their forces only to open fire in self-defense.

On 9th September 1962, the Indian army attacked on the eastern part of the border and occupied Kejielang, north of the McMahon Line. An area even the Indian maps depicted as Chinese. On 16th September 1962, Beijing launched diplomatic protests against the Indian attacks, again seeking to avoid combat. For a while, both sides engaged in a diplomatic face-off, keeping an eye on each other whilst preparing for combat, building up forces and improving their situation. On 12th October 1962, India launched an all-out attack on the Chinese border. This led the Chinese leaders to decide on a counter attack against the Indian army with the military objective “to eliminate Indian positions forward of the line of control and to destroy the organic units of the invading Indian troops.”

Whilst Chinese forces were attacking, Beijing sought a diplomatically negotiated solution, proposing three measures to resolve the border dispute. India refused the proposals. The PLA then continued the counter attack, and as the PLA enjoyed superiority in combat strength, China had the capacity to take the territory it claimed by force. Despite being successful, Beijing showed restraint. China announced a unilateral cease-fire, and ordered her forces to withdraw 20 km back from the line of actual control along the disputed border. A move which laid the ground for improving relations between India and China in the late 1980’s.

During the war, both China and India sought to limit the fighting by avoiding the use of air power, which was to the advantage of India. The PLAAF pilots were combat experienced from participation in the Korean war and the Taiwan Strait crisis, and would have been superior to the Indian Air Force.

1979 Vietnam Border War

In the late 1970’s, China felt particularly vulnerable. The Sino-Soviet relationship had deteriorated significantly, and Soviet forces were deployed along the Chinese northern border. During the 1965-
75 Vietnam War, the Soviet Union supported North Vietnam, which resulted in a strong relationship between Vietnam and the Soviet Union. After North Vietnam’s victory, the Vietnamese began to harass ethnic Hoa Chinese residing in the southern part of Vietnam, causing many to flee as boat refugees. China and Vietnam disagreed on the exact demarcation of the eight hundred mile border between the two countries, and they had competing claims to maritime locations in the South China Sea, among these the Paracel and Spratly Islands. In June 1978, Vietnam was preparing for war against Cambodia, and in order to strengthen its position, it joined the Soviet led Council for Mutual Economic Assistance (COMECON). In response, the Soviets promptly began sending weaponry to Vietnam. In spite of several Chinese diplomatic attempts to prevent it, Vietnam attacked Cambodia on 25 December 1978. Cambodia was allied with China, and if China did not respond to the attack on Cambodia, then China would look weak. If China responded militarily, they would have to be careful not to provoke a Soviet military response on China. China did not want to conquer territory. Chinese political coercion had failed and China wanted to “teach Vietnam a lesson” for what China perceived as Vietnam’s “anti-China” policies. After three diplomatic warnings, which Vietnam failed to acknowledge, China attacked the northern border of Vietnam on the 17 February 1979 in a limited attack that neither involved the Chinese Navy nor the Air Force. Prior to the attack, China had carefully informed both friends and foes that in case of a Chinese attack on Vietnam, China would withdraw swiftly. After 14 days of intense fighting with heavy Chinese losses, China concluded its offensive and withdrew after a further eleven days. In this case, China had conducted a limited military offensive for the political purpose of telling Vietnam that China had had enough of its anti-China policies.

1995-96 Taiwan Crisis
China and Taiwan experienced the third Taiwan crisis in 1995-96. In the years leading up to the crisis, Sino-U.S. relations had been tense, as a result of the Tiananmen Square crackdown in 1989, a U.S. sale of 150 F-16 fighters to Taiwan in 1992, and the Clinton Administrations revision of protocol rules regarding U.S. “unofficial treatment of Taiwanese diplomats”. The 1995-96 Taiwan crises was a demonstration of political coercion, where China used military means to send Taiwan and the U.S. the message that China would not accept any move towards Taiwanese independence. The crisis began in May 1995, when the Taiwanese President Lee was granted a visa to the U.S. to

China’s Defense Strategy

visit Cornell University, where he had previously studied, after Secretary of State Warren Christopher had assured his Chinese counterpart, Qian Qichen, a month earlier that this would not happen. President Lee held a speech there, which the Chinese perceived as provocative. Upon his triumphant return to Taiwan in mid-June, Chinese military and political leaders met to decide how to respond. One month later, on the 18th July 1995, China initiated a series of military exercises and missile tests that lasted until March 1996. The exercises in 1995 were held to signal China’s displeasure with the Cornell speech, whereas the 1996 exercises were an attempt to intimidate Taiwan in the lead up to the Taiwan election, where the pro-independence candidate President Lee seemed certain of re-election. Over the course of the nine months the crises lasted, the exercises gradually grew in intensity from minor naval and air live fire exercises, to a large scale amphibious landing and aerial bombing exercise involving 40 maritime vessels, 260 aircraft, and an estimated 15,000 troops. Missile tests, which started from 90 miles off Taiwan, gradually came closer, and ended up less than 50 miles from Taiwan’s busiest port. The exercises were meant to send a clear political message to both Taiwan and the U.S. that Taiwan independence was unacceptable, and that China would be prepared to go to war over the issue. The seriousness of the government rhetoric was also motivated by Chinese popular nationalism, which in the case of Taiwan is an important political factor in China. Most Chinese, including liberal-minded intellectuals, do not want to see Taiwan slip away from the mainland. Nationalism is also coloring the PLA’s attitude towards Taiwan, as the PLA has a deep seated belief that the military bears a special responsibility for achieving unification with Taiwan.

Nevertheless, China went to great lengths to ensure that the crisis would not escalate out of control. Prior to the exercises, the Chinese Foreign minister was dispatched to Washington to ensure that the Clinton administration was aware that China was only planning military exercises and missile tests, and not an attack on Taiwan. Tough talk by military leaders was followed by assurances that China did not want war with Taiwan. The crisis went on for nine months, during which time the military leaders had ample time to plan and choreograph the exercises to ensure that they sent the right messages, and that the crisis did not spin out of control. China used saber-rattling, brinkmanship and threats of war as part of political coercive diplomacy to achieve a political goal, with no intention of going to war. This characteristic of Chinese behavior is very important to understand, in order to correctly be able to assess Chinese behavior in a potential future crisis.


Chapter 2

Research by Allen S. Whiting has shown that there are five characteristics of Chinese crisis behavior.\(^{126}\)

- Exaggerated threat behavior by the leadership to gain acceptance for military plans or to gain popular support.
- Risk acceptance against a superior enemy. Through careful “risk management” China has shown that she is willing to take risks even against superior enemies.
- Risk management. China has shown that she is careful in balancing use of force, in order to limit the risk of escalation and/or to enable conflict resolution.
- Advance deterrence warning. In numerous cases, China has taken great care to ensuring that the opponent is made aware of China’s intentions in advance.
- Seizure of the initiative and pre-emption. China’s emphasis on the offensive and the seizure of the initiative and pre-emption are founded in its military culture, dating back thousands of years.

**United Nations Peacekeeping Operations**

China has, as a permanent member of the United Nations (UN) Security Council, participated in 18 UN peacekeeping operations since 1990. As of the end of November 2008, China had 1,949 peacekeeping personnel serving in nine UN peacekeeping areas.\(^{127}\)

<table>
<thead>
<tr>
<th>Mission</th>
<th>Area</th>
<th>Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNMONUC</td>
<td>Africa – Congo</td>
<td>88 military observers and staff officers, 175 engineering troops, 43 medical personnel</td>
</tr>
<tr>
<td>UNMIL</td>
<td>Africa – Liberia</td>
<td>275 engineering troops, 240 transportation troops, 43 medical personnel</td>
</tr>
<tr>
<td>UNMIS</td>
<td>Africa – Sudan</td>
<td>275 engineering troops, 100 transportation troops, 60 medical personnel</td>
</tr>
<tr>
<td>UNAMID</td>
<td>Africa – Darfur</td>
<td>315 engineering troops</td>
</tr>
<tr>
<td>UNIFIL</td>
<td>Middle East - Lebanon</td>
<td>275 engineering troops, 60 medical personnel</td>
</tr>
</tbody>
</table>

*Table 2. Chinese participation in UN peacekeeping operations as of November 2008*\(^{128}\)


\(^{128}\) Ibid.
In addition to the troops above, China has also deployed 208 Chinese peacekeeping policemen to Liberia, Kosovo, Haiti, Sudan and East Timor.\(^{129}\)

The Chinese participation in UN peacekeeping missions also has a clear political dimension. Apart from its contribution to the UN forces in Lebanon, it is a common denominator of the Chinese UN peacekeeping missions in Africa that China has important strategic interests in these countries, and that China has engaged in mutually beneficial agreements with these African countries. In 2007, China and Congo forged a new economic partnership in which China provides economic aid to Congo, and in return is granted access to minerals and other resources of Congo, such as timber and oil.\(^{130}\) In 2008, the partnership went further\(^{131}\) when China and Congo sealed a deal worth $9bn, from which Congo would receive 2,400 miles of road, 2,000 miles of railway, 32 hospitals, 145 health centers and two universities with a total value of $6bn. In return, China receives 10m tons of copper and 400,000 tons of cobalt. In Liberia, the picture is the same. In 2007, during Hu Jintao’s visit to Liberia, China cancelled Liberian debts of $10m and went on to donate $25m towards rebuilding Liberia after the civil war. In return, China got access to Liberia’s raw materials, including iron ore.\(^{132}\) China is a main investor and a key trading partner in Sudan. Sudan imports cheap goods from China and the Sudanese economy has grown close to 10% per year and much of that is down to its relationship with China.\(^{133}\) In 2004, China’s biggest overseas oil investment was in Sudan, where the China National Petroleum Corp owns 40% of the Greater Nile Operating Co., a consortium that dominates Sudan’s oil fields in partnership with the national energy company and firms from Malaysia and India. In 2007, Sudan doubled its oil export to China with 200,000 barrels a day, which was 40% of Sudan’s total output.\(^{134}\) China is Sudan’s largest supplier of arms, which are used to wage the Sudanese civil war. The arms sales include tanks (Type-59), fighters (J-6), bombers (A-5 Fantan), helicopters, machine guns and rocket propelled grenades.\(^{135}\)

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129) Ibid.
Active Defense

In the Chinese government’s white paper on “China’s National Defense in 2008”, it is stated that China is implementing a strategy of active defense. The white paper does not specify what active defense means, but many scholars and theorists have discussed the meaning of active defense. The Chinese president Deng Xiaoping said that “active defense was not merely a defense per se, but includes defensive offenses. Active defense includes our going out, so that if we are attacked we will certainly counter attack.” Senior Colonel Wang Naiming explains: “[active defense] emphasizes that the nature of our military strategy is defensive, but also active in its requirements. It requires the organic integration of offense and defense, and achieving the strategic goal of defense by active offense. When the conditions are ripe, the strategic offense should be led to counterattack and offense.” What is explained here is that offensive action can be taken in the overall strategic defense of China. The Chinese studies of the American wars fought against Iraq in 1991 and 2003, have led them to conclude that the first battle against a strong opponent will be extremely important, and perhaps even decisive for the outcome of the conflict. This puts pressure on the PLA to be able to take the initiative. A researcher at the Academy of Military Sciences, the top establishment responsible for military strategy and doctrine in the PLA, explained that active defense does not rule out a first strike: “Our strategic principle of “striking only after the enemy has struck” certainly does not exclude sudden “first strikes” in campaign battles or counter strikes in self defense into enemy territory.” Students of Chinese military affairs find that seizing the initiative is embedded in doctrine as a preferred course of action.

A Summary of China’s Defense Strategy

China’s defense doctrine has developed over time as the strategic situation around her has changed. In what now seems a bygone era, China was under threat of total war with the Soviet Union, but she

139) Ibid.
now enjoys peace and is mainly concerned with strategic issues on her periphery, and is starting to consider her strategic national interests abroad as a natural consequence of the globalization of the Chinese economy and the dependence on natural resources from abroad. The PLA doctrine has changed from a Chairman Mao inspired people intensive doctrine to a modern doctrine based on the use of mechanized and digitized forces, just as we see them in the western countries. China’s strategic issues of concern seem minor compared to the threat of total war in the past, but they should not be underestimated. Each of them has significant importance to China’s internal stability, which to a large extent rests on continued economic growth, maintenance of sovereignty and national pride. Relations with Taiwan have improved, and further peaceful developments may enable the PLA to re-orientate their modernization efforts away from a Taiwan conflict and focus on other issues of national interest. China perceives that the influence of military security factors in international relations is mounting, and that struggles for strategic resources, strategic locations, and strategic dominance have intensified. Chinese economic growth rests on unhindered maritime merchant traffic transporting oil and natural resources to China, and on the return of cheap goods produced in China. Any serious hindrance to this traffic may cause a significant reaction in China. China is extremely sensitive about her sovereignty. Beijing intends to keep the state united, and will not tolerate any attempt to destabilize the country, neither internally nor externally. The potential oil and gas deposits in the East and South China Sea are of paramount importance to an ever more energy-demanding Chinese economy, and reaching an agreement on the EEZ delimitation may prove difficult. China has shown that she is capable of negotiating a compromise and reaching agreements, as it was demonstrated with the border agreements with Russia and Vietnam. When it comes to the border issue with India, China has shown enormous patience by continuing negotiations for 27 years. Whether China has the same patience when it comes to the division of resources in the East and South China Sea remains to be seen, but the increasing demand for resources puts ever more pressure on the governments involved to find a solution.
Chapter 3

3.

The Rapidly Increasing Defense Budget

The Official Defense Budget

Over the course of the last decade, China has experienced an economic boom of unprecedented scale, and with that China is on a path to becoming a world great power. With a population of 1.3 billion people, which is expected to increase to 1.5 billion by 2033\(^{142}\), and a fast growing economy, China can be expected to achieve significant global political and economic power. With its new found economic strength as the basis, China has initiated a significant modernization of its military forces. China is investing billions of dollars in military equipment, naval vessels and modern aircraft that will give China a significant military capability in the future. The defense budget is an important indicator of a state’s commitment to its national security. The size and growth of the budget tells us how highly national defense is prioritized compared to the rest of the economy. Knowledge of how the budget is spent is also very important. What level of modernization is taking place, and how is the budget distributed between salaries and pensions, maintenance and infrastructure and acquisition of new weapons? This information reveals the national security intentions and priorities, and will enable an assessment of the national defense strategy.

![Official Chinese Defense Budget](chart)

Figure 1. Official Chinese Defense Budget 1999 - 2009.
Source: Chinese Government white paper on “China’s National Defense 2008”.

\(^{142}\) Reuters, “China population to reach 1.5 billion by 2033”, 4 December 2007, (http://www.alertnet.org/thenews/newsdesk/PEK8534.htm).
After the third Taiwan crisis in 1995-96, China initiated a rapid development of its armed forces which has been supported by substantial annual increases in the defense budget. An analysis of the PRC’s defense budget and GDP data\textsuperscript{143} for the period of 1999 to 2009, shows an average annual defense budget growth of 15.9\% compared to an average annual GDP growth of 12.6\%. The Chinese white paper from 2008 states that the defense expenditure is:

“Guided by the principle that defense expenditure should grow in line with the demands of national defense and economic development”... “China has insisted that defense development should be both subordinated to and in service of the country’s overall economic development, and that the former should be coordinated with the latter.”\textsuperscript{144}

In accordance with the above, defense expenditure is subordinate to the economy, but has to be in line with the demands of the national defense. This is a policy that was adopted by Deng Xiaoping in 1978, and later codified by the CPC in 1997 by the “16-Character Policy.”\textsuperscript{145}

The official defense budget has since 1999 been fluctuating between 1.2 – 1.42\% of the GDP and 7.14\% - 8.16\% of government expenditure.\textsuperscript{146}

\textbf{Not the Whole Story}

Countries all over the world use defense budgets as an indicator for strategic intentions. Budgets of reasonable sizes combined with transparency are used to ensure international security, as this supports confidence building and lowers the risk of an arms race. As described above, the official Chinese defense budget has been rising by an average of 15.9\% over the past 10 years, and in 2009 the budget was $70 bn, making it the second largest budget in the world. This will inevitably be a cause for concern around the world. In addition to the increase in defense spending, the transparency of the Chinese defense budget is very low, and the Chinese are very reluctant to explain what the budget is used for. That is why there are analysts all over the world assessing whether the official Chinese defense budget tells the whole story. The Chinese government released a white book on “China’s National Defense in 2008” and this explains what the budget includes:

\begin{itemize}
  \item \textsuperscript{144} Ibid, para. XII Defense Expenditure.
  \item \textsuperscript{145} For more information about the 16-Character Policy see chapter 12; The Military Industrial Complex, Arms Import and Export.
\end{itemize}
China’s defense expenditure mainly comprises expenses for personnel, training and maintenance, and equipment (author’s emphasis). Expenses for personnel and training and maintenance account for two thirds of the defense expenditure. In 2007, the defense expenditure was used to cover the expenses of the active force (RMB343.439 billion), the reserve force (RMB3.693 billion) and the militia (RMB8.359 billion).147

Compared to defense budgets published by other governments this is not very detailed. Western analysts of the Chinese defense budget are reasonably certain that the official budget omits a number of critical military related expenses such as:

- Nuclear and strategic forces.148
- Acquisitions of foreign weapons. Between 1989-1999, China is estimated to have imported an average of $825 million worth of arms per year,149 funded from extra-budgetary funds. From 2000 and onwards, China has continued the extensive foreign acquisition program. As an example of recent foreign acquisitions, between 2007 and 2009 China bought a series of SA-300PMU2 surface to air missiles systems at an assessed value of $5bn.150 Analysts believe that this sort of acquisition is funded from extra-budgetary funds.
- Research and Development (R&D) is funded from other parts of China’s state budget.151
- Expenses for the People’s Armed Police, which receives military training and constitutes a significant part of the armed forces, are paid out of a separate central government budget, while costs for the PLA Reserves and militia forces are partly borne by provincial budgets.
- Earnings from PLA-run businesses are not included in the defense budget, and it is not clear who profits from the business benefits. Since its inception the PLA has been involved in extensive business ventures ranging from farming, hotels, hospitals and to airline companies. Between 15,000 and 20,000 companies were known to be part of this structure in the mid 1990’s. In 1998, the PLA was ordered to divest its business, and in the following years a gigantic privatization program took place. However, the PLA still runs extensive business ventures, such as China United Airlines, telecommunication, wireless telephone industries and agriculture. The PLA owns 11 conglomerates of military industries producing both military and civilian products, and the net profit of all these enterprises is assessed by foreign analysts to be $1-3bn.152 The PLA-run businesses are getting

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increasingly profitable as the industry is adopting market business practices. As an example, the PLA owned Xi’an International Aircraft Corp. that produces military and civilian aircraft, and which reported profits in 2008 of $56.87m, up 312% from 2007. The question is; who does this profit benefit?

The Real Defense Budget

The lack of transparency in the defense budget has led to speculation as to the real size of the Chinese defense budget - whether it includes all the financial aspects of military spending in China. There is general agreement amongst international experts as to what type of costs China has not included in the budget; however the experts differ in their assessment of the size of the “real defense budget”. The International Institute for Strategic Studies (IISS) has provided a detailed assessment of what they believe was the real Chinese defense budget for 2006.

<table>
<thead>
<tr>
<th>China’s Defense Budget 2006</th>
<th>US $bn at market exchange rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Official PLA budget (including local militia funding)</td>
<td>37.2</td>
</tr>
<tr>
<td>Foreign weapons purchase (2000-2007 average)</td>
<td>2.1</td>
</tr>
<tr>
<td>Subsidies</td>
<td></td>
</tr>
<tr>
<td>Loss-making enterprises</td>
<td>0.56</td>
</tr>
<tr>
<td>Defence Industry</td>
<td>5.0</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>5.64</td>
</tr>
<tr>
<td>New Product Expenditure</td>
<td>5.99</td>
</tr>
<tr>
<td>Arms Exports (50% of annual average 2000-2007)</td>
<td>0.73</td>
</tr>
<tr>
<td>People’s Armed Police</td>
<td></td>
</tr>
<tr>
<td>Central Funding</td>
<td>4.2</td>
</tr>
<tr>
<td>Local Funding</td>
<td>0.65</td>
</tr>
<tr>
<td>The IISS estimate of “the real Chinese defense budget 2006”</td>
<td>62.1</td>
</tr>
</tbody>
</table>


153) For more information see chapter 12; The Military Industrial complex, arms import and export.
156) To be treated with caution. The IISS hopes to conduct further studies on military related R&D.
IISS estimates that the real defense budget is at $62.1bn, which is equivalent to 2.36% of the GDP, whereas the Chinese official share is 1.41% of GDP. Interestingly, the IISS estimate of the real defense budget does not include expenses for strategic nuclear forces, which the United States

![Bar Chart: Comparison of outside estimate of PRC military spending 2006](image)

**Figure 2 Comparison of outside estimate of PRC military spending 2006.**

Government and research institutes have developed various – but often incompatible – methods to account for the PLA’s off-budget expenditures, sources of income, and other factors. Two different exchange rate models – official exchange rate and purchasing power parity indices – further complicate estimates of China’s defense spending. Estimates above are shown in 2006 US Dollars based on official exchange rates, unless otherwise indicated.

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believes are not a part of the official budget either. This, combined with different assessment of the size of each of the above expenditures, can explain why there are such vast differences in the budgetary estimates between the various institutions. Figure 2 below shows how vast differences are in the assessment between the various institutions, but they all agree that the real Chinese defense budget is significantly higher than claimed by the Chinese government.

The above table depicts the differences in the Chinese defense budget for 2006. However, the real defense budget has been significantly greater for several years. Accordingly, the accumulated effect of the real defense budget is significantly greater, as can be seen in the figure below. Also, as a percentage of GDP, the figure is higher than the 1.4% claimed by the Chinese government. Where the IISS estimate is 2.36% of GDP, the DIA Low and DIA High estimates of the defense budget equate to between 2.7% - 4.0% of the GDP.158 In 2007, the U.S. Defense expenditure was 3.99% of GDP.159

Figure 3. PRC Military Budget and Estimated Expenditures 1996-2008.

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The graphic depicts China’s official defense budget since 1996, and associated US Department of Defense estimates of actual military expenditure. The DoD estimates include projected expenses of strategic forces, foreign acquisitions, military R&D and paramilitary forces. All figures in 2007 US Dollars.160

The Value of the “Real Defense Budget”

In order to make a relevant comparison of the defense budgets between two states, it is necessary to take into account the difference in price levels of the various types of expenditures on the defense budget, especially when comparing a developing country like China with an industrial state like the U.S. The cost of labor and building of infrastructure is significantly lower in China than it is in the west, and this should be taken into account when assessing the value of the real defense budget. This is difficult though, and it can only be by rough estimate. A Chinese military expert recently published that a Chinese soldier has an average salary of around 1000 RMB (plus) per month161, which is equivalent to $150 per month, whereas an average US soldier’s salary is around $4,500 per month.162 These are only rough numbers, but they show that there are vast differences, and that a Chinese soldier is likely to be significantly cheaper than a US soldier. Hence, the justification for using a Purchasing Power Parity (PPP) methodology when assessing the value of what can be termed “the Real Defense Budget.” PPP calculations cannot be used for all expenses in the Chinese budget. When it comes to determining the value of foreign acquisitions and other foreign financial transactions, then the use of the market exchange rate is more appropriate, since the weapons are paid at market exchange rate. When it comes to assessing the value of salaries and local infrastructure in China, then a PPP valuation is justified. An optimized assessment would therefore use both methods in their calculations, if sufficiently reliable data can be obtained, and that is, as noted, a problem. The Stockholm International Peace Research Institute (SIPRI) previously used PPP for defense budget calculation, as “the PPP rate is superior to the Market Exchange Rate for international comparison of resource consumption.” SIPRI later abandoned the methodology because they cannot obtain sufficiently reliable financial information for an assessment. This resulted in a “significant downward shift” in the assessment of China’s level of military

161) China Daily, “Army needs better soldiers: military expert”, 12 March 2009, (http://www.chinadaily.com.cn/china/2009-03/12/content_7570824.htm). It is uncertain as to which particular group of soldiers the author is referring to, as in; high or low in the hierarchy. This author assumes it is a lower level salary in the military hierarchy.  
162) Simply hired, “Average Active US Soldiers Salaries”, 13 March 2009, (http://www.simplyhired.com/a/salary/search/q-active+US+soldier). The average annual salary for an active U.S. soldier is $55,000. Average active US soldier salaries can vary greatly due to company, location, industry, experience and benefits. This salary is calculated using the average salary for all jobs with the term “active U.S. soldier” anywhere in the job listing.
Despite the difficulties, the IISS published a PPP assessment of the Chinese defense budget for the year 2006:

<table>
<thead>
<tr>
<th>China’s Defense Budget 2006</th>
<th>US$ bn at market exchange rates</th>
<th>US$ bn incl. PPP estimates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Official PLA budget (including local militia funding)</td>
<td>37.2</td>
<td>89.6(*)</td>
</tr>
<tr>
<td>Foreign weapons purchase (2000-2007 average)</td>
<td>2.1</td>
<td>2.1</td>
</tr>
<tr>
<td>Subsidies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loss-making enterprises</td>
<td>0.56</td>
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<td>5.64</td>
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<td>People’s Armed Police</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central Funding</td>
<td>4.2</td>
<td>16.0(*)</td>
</tr>
<tr>
<td>Local Funding</td>
<td>0.65</td>
<td>2.48(*)</td>
</tr>
<tr>
<td><strong>The IISS estimate of “the real Chinese defense budget 2006&quot;</strong></td>
<td><strong>62.1</strong></td>
<td><strong>128.1(*)</strong></td>
</tr>
</tbody>
</table>

Table 2. Estimated Total Military-Related Revenue 2006 for China, (*) includes PPP. Source: IISS Military Balance 2009.

As can be seen in table 2, the IISS PPP calculation is only applied to the parts of the budget that contain salary and infrastructure, and not to foreign acquisitions. This means that even though the PPP numbers are an estimate, they do have merit. IISS estimates that the PPP value of the real defense budget is at $128.1bn, which is 256% higher than the official budget of $37.2bn. The official Chinese defense budget for 2009 is $70bn, almost twice the size of the 2006 budget. No data is yet available as to the PPP value of the budget.

**An International Comparison**

The significant growth in defense expenditures is a concern not only to the US, but also to the countries in the region, many of which have strained relations with China. A PPP comparison, seen in the figure below, of the real value of defense budgets between major and regional powers, shows that

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164) To be treated with caution. The IISS hopes to conduct further studies on military related R&D.
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China’s defense budget in 2007 was the second largest in the world, yet was still dwarfed by the budget of the United States. A comparison to other great powers of the world shows that China’s military expenditure measured in PPP is significantly higher than Russia’s, and more than double the spending of the United Kingdom and France. Regionally, the PPP expenditure of China is more than that of Japan, India and Australia combined.

![2007 Military Expenditure PPP](image)

*Figure 4: PPP comparison of Chinese 2007 defense Budget with the US and other major and regional powers.*

There is no doubt that the development of China’s military capacity will be followed closely in the region in the years to come, and China is aware of this. In response to the international criticism on the lack of transparency in the defense budget, China announced in September 2007 that she would take part in the UN Budget Transparency System and provide the UN Secretary-General with

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defense budget data for the UN Register of Conventional Arms. The move is intended to ease the mounting pressure, especially from the US and Japan.\textsuperscript{166} However, there are two ways in which a country can report its military expenditures to the UN. The Standardized Reporting Form and the Simplified Reporting Form.\textsuperscript{167} Countries that report using The Standardized Reporting Form provides other states with a level of detail of the reporting country’s military expenditures that can ensure other states that all aspects of military related expenditures are included, and it allows other states to verify the information. The Simplified format, on the other hand, does not include enough detail to ensure other states that all expenses have been included, and other states cannot verify the information. China has unfortunately chosen to report using the simplified reporting format,\textsuperscript{168} and the Chinese defense budget has not become more transparent in spite of promises to make it so.

Summary
A state allocates funds to its defense budget in order to obtain territorial security, and to acquire means that will enable it to safeguard its national interests. This has been a high priority to the Chinese government over the course of the past decade. Since 1999, the Chinese defense budget has increased by an average of 15.9\% per year, which has enabled the PLA to undergo an impressive modernization over a relatively short period of time. This has naturally become a cause for concern for the neighboring countries in the region as well as for the U.S., who has become the security guarantor for Taiwan and several states in the region, such as Japan and South Korea. The 2009 official defense budget is at $70 bn.; however, the Chinese government does not follow the international standards for the calculation of the budget, which makes it difficult to compare the budget with other states’ defense budgets. When assessing the Chinese defense budget, it is also necessary to take the comparatively low price levels in China into account. The corrected defense budget of the PRC is therefore significantly higher than what the Chinese government reports, and China therefore now has the second largest defense budget in the world; somewhere between 2 - 4\% of its GDP, with a PPP value assessed to be around $140bn in 2007. The lack transparency and the lack of trust in the Chinese defense budget is a problem because it generates uncertainty and mistrust. The significant allocation of funds to the PLA is decided by the Chinese government, which is led by the CPC; however there are close relations between the CPC and the PLA leadership, which will be explored in the following chapter 4 about the “PLA and the Communist Party”.

\textsuperscript{166} South China Morning Post, 3\textsuperscript{rd} September 2007, Shi Jiangtao, Beijing pledges greater military transparency.
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4.

PLA and the Communist Party

To understand the PLA, it is important to understand its relationship with the CPC. Historically, the PLA was an integral part of the CPC when it took power, and the PLA and the CPC have enjoyed a “symbiotic” relationship, in which the PLA performed political functions and the CPC was a revolutionary Party committed to armed struggle. The PLA is subordinate to the CPC, which maintains political control of the PLA. The PLA has been an important part of maintaining internal control of the population, as it was demonstrated when the PLA quelled the mass demonstrations at the Tiananmen Square in June 1989. Since its birth in 1927, the PLA has gone through three major phases. During the first phase, in the period 1927-49, the PLA was in a revolutionary phase, in which the PLA was essential in bringing the Communist Party to power. In the second phase from 1949 to 78, the PLA went through a highly politicized phase, during which the PLA gradually involved itself more and more in politics. The political involvement peaked under the Cultural Revolution (1966-76), where the Communist Party struggled for power within itself. In this period, the PLA was deeply and extensively entangled in both policy-making and power struggles at all levels. The PLA became an instrument of the CPC, subordinate to the CPC, and the PLA was institutionally penetrated by the CPC through a network of political commissars – and most, if not all, officers were Party members. The PLA was not only politicized, but also commercialized. In the early days, there was very limited funding for the PLA, which had to grow its own food and produce its own weapons, and therefore the PLA became more and more involved in industry and business. The commercial activities grew to such proportions that military activities in many units became very limited, or indeed non-existent. The PLA was very politicized and fractionalized in its political stance.169 The third phase began in 1977, and over the course of the next 30 years the PLA went through a phase of de-politicization and de-commercialization, in a move to bring back military professionalism to the PLA. It was especially the significant losses that were incurred during the 1979 Sino-Vietnamese war that made the government realize the need to change the PLA back into a more professional military fighting force. The subsequent decade of the 1980’s was the decade of de-politicization, and the 1990’s the decade of de-commercialization. Throughout the three phases, the CPC and/or its paramount leader has remained the dominant civilian institution over and within the PLA.

Limited Insight Behind the Scenes

The Chinese government is very secretive about its defense policies and we have limited information about what is going on behind the scenes. Very little information is released about the future plans for the development of the PLA, and it is not possible to ascertain the discussions and differences of opinion among the various members of government, or in the PLA top leadership. Public discussions mainly take place among the lower ranks. Because of that, foreign scholars of the PLA and Chinese defense policies in general, are left with interpretations of trends based on what is known, such as how many generals are in political organizations, how old they are, which service they are from, or who they are related to. These analyses can, based on changes in manning of top level PLA positions, assess in which way the PLA is moving in terms of emphasis of service and level of political affiliation to the Communist Party etc. However, we do not know what these people think, and we do not have any information about the internal discussions that inevitably take place, service rivalry etc. In recent years, Chinese civilian scholars and PLA advocates more and more often offer their views on what policies should be pursued on various issues, and a debate is taking place in China, but none of the top PLA officials partake in these discussions. The following discussion of the top PLA leadership is therefore also limited in the depths to which it can go. However, it will describe the system and the changes that we see.

The Central Military Commission

In the U.S., the President coordinates national security and foreign policy matters in the National Security Council (NSC). Represented in the NSC are the President, Secretary of State, Secretary of Defense, the Secretary of the Treasury, from the military the Joint Chiefs of Staff, the Director of national intelligence and a number of other advisors. China does not have an NSC, and does not have a state organ that coordinates the important ministries that hold power in security and foreign policy matters. The ultimate organization of power in China is the Standing Committee of the Politburo, but neither the ministry of defense, the ministry of foreign affairs, nor the ministry of state security is represented in the Standing Committee of the Politburo. The Central Military Commission (CMC) is the highest state military organ with the responsibility of commanding the entire armed forces of the country. It has 11 members of whom only one, the Chairman, is a civilian, while the

remaining 10 members are generals from the PLA.\textsuperscript{172} From 2002 to 2004, both Jiang Zemin and Hu Jintao were members of the CMC. Jiang Zemin had retained his Chairmanship of the CMC after he left as General Secretary of the Communist Party, and Hu Jintao continued as Vice Chairman in the CMC. This move would ensure a smooth transition to Hu Jintao when he took over the Chairmanship of the CMC in 2004. This was the only organization in which such a transition took place, which signifies the importance of the CMC. It can also be expected that Hu Jintao will appoint one of the civilian fifth generation leaders as vice-chairman before 2012, to ensure a smooth transition to the next chairman of the CMC. As mentioned before, the Standing Committee of the Politburo is not organized to coordinate the important ministries, and neither is the CMC. Of the 10 generals in the CMC, one is the minister of defense, but the minister of foreign affairs, the minister of finance, and the head of intelligence services are not represented in the CMC. There are two parallel CMC’s that govern the military affairs in China; The state CMC and the Party CMC. The organizations are similar in structure and, apart from a short period in 2004 where Jiang Zemin resigned from the Party CMC and remained in the state CMC, the same Party members hold the equivalent positions in both the state and Party CMC. The State CMC is supervised by the Standing Committee of the National People’s Congress (about 150 people), whereas the Party CMC is subordinate to the Politburo of the Party (about 19 to 25 people), which is where the ultimate power in China rests. When it comes to military matters, the power of the Politburo resides in the fact that its members generally also hold powerful positions in the state, and are in control over personnel appointments to high positions in the Party and the state. The Chairman and the two vice-chairmen of the CMC are also members of the Politburo, so the PLA is well represented at this top organization. The chairman of the CMC is President Hu Jintao, who was elected by the National People’s Congress (NPC). The selection of other members is decided by the NPC and its Standing Committee on the basis of the nomination by the chairman Hu Jintao. The Commission is elected for a term of five years and can stand for reelection.

The CMC was in the past only manned by ground force officers; however in 2004, the CMC was enlarged from 8 to 11 members when the PLA Air Force, the PLA Navy and the 2\textsuperscript{nd} Artillery Corps (nuclear forces) became represented by their respective commanders. This was to reflect the growing importance of the smaller services and the adaptation of Joint Operations in the PLA. The majority of PLA representatives in the CMC are still from the ground force.

The Session of the 17th CPC Central Committee decided upon the following members of the CMC.

<table>
<thead>
<tr>
<th>Role in CMC</th>
<th>Name</th>
<th>PLA Job</th>
<th>Political affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chairman</td>
<td>President Hu Jintao</td>
<td></td>
<td>General Secretary of the CPC Central Committee</td>
</tr>
<tr>
<td>Vice Chairman</td>
<td>General Guo Boxiong</td>
<td></td>
<td>Member of the Politburo of the 17th CPC Central Committee</td>
</tr>
<tr>
<td>Vice Chairman</td>
<td>General Xu Caihou</td>
<td>Political officer.</td>
<td>Member of the Politburo of the 17th CPC Central Committee</td>
</tr>
<tr>
<td>Member</td>
<td>General Liang Guanglie</td>
<td>Minister of Defense</td>
<td>State Councilor</td>
</tr>
<tr>
<td>Member</td>
<td>General Chen Bingde</td>
<td>Director General Staff Department</td>
<td>Member of the 17th CPC Central Committee</td>
</tr>
<tr>
<td>Member</td>
<td>General Li Jinai</td>
<td>Director of the PLA General Political Department</td>
<td>Member of the 17th CPC Central Committee</td>
</tr>
<tr>
<td>Member</td>
<td>General Liao Xilong</td>
<td>Director of the General Logistics Department</td>
<td>Member of the 17th Central Committee</td>
</tr>
<tr>
<td>Member</td>
<td>General Chang Wanquan</td>
<td>Director of the General Armaments Department</td>
<td>Member of the 17th CPC Central Committee</td>
</tr>
<tr>
<td>Member</td>
<td>General Jing Zhiyuan</td>
<td>Commander of the 2nd Artillery Corps</td>
<td>Member of the 17th CPC Central Committee</td>
</tr>
<tr>
<td>Member</td>
<td>General Wu Shengli</td>
<td>Commander of the PLA Navy</td>
<td>Member of the 17th CPC Central Committee</td>
</tr>
<tr>
<td>Member</td>
<td>General Xu Quliang</td>
<td>Commander of the PLA Air Force</td>
<td>Member of the 17th CPC Central Committee</td>
</tr>
</tbody>
</table>

Table 1. Members of the Central Military Commission after the 17th Party Congress October 2007.¹⁷³

The CMC is the supreme military command, subordinate to the State Council. Subordinate to the CMC are the General Staff Department, the General Political Department, the General Logistics Department and the General Armament. Also organized under the CMC is the Department of the Navy, Department of the Air Force, Second Artillery Force, military schools and universities, the People’s Armed Police (PAP) Force as well as seven military Area Commands also known as MR. Commanders from these headquarters are also members of the 17th CPC Central Committee.

Chapter 4

Figure 1 The Command Structure of the People’s Liberation Army.174

The Ministry of National Defense does not hold the power of its equivalents in western democracies. Both the Ministry of National Defense and the CMC are subordinate to the State Council, but whereas the CMC is where power is held, the role of the MoD is very much diluted. In the past, the Minister of National Defense would be a member of the Politburo and a vice-chairman of the CMC. However, the current Minister of National Defense, General Liang Guanglie, is only a normal member of the CMC and not in the Politburo. The Ministry of National Defense is the organ for military affairs in the State Council, but it does not command the armed forces; that is done by the CMC. The primary responsibilities of the Ministry of National Defense are to exercise unified administration over the building of the armed forces of the country, such as the recruiting, organizational setup, equipment, training, military scientific research of the people’s armed forces, and the ranking and remuneration of the officers and men. The work of the ministry is conducted respectively by the Headquarters of the General Staff, the General Political Department, the General Logistics Department and the General Armament Department. These departments are ultimately responsible to the CMC. The true players in military matters are the members of the CMC, and peripheral players are the commanders of the seven MRs, their political commissars, and the deputy heads of the four general departments.\textsuperscript{175}

**PLA Leaders as Members of Political Institutions**

High ranking PLA officers are all members of the CPC, and the top military leadership holds positions in political institutions. At the 17\textsuperscript{th} Congress of the CPC, 65 members of the 371 members were from the PLA elite. Two military leaders serve on the 25 member Politburo, the vice-chairman of the CMC General Guo Boxiong and vice-chairman of the CMC General Xu Caihou. Before 2007, the vice-chairman of the CMC, General Xu Caihou, had a post in the powerful Permanent Secretariat of the Politburo, which is responsible for the daily administrative matters, and as such is an important center of influence. He was responsible for military personnel and political commissars. However, on the 17\textsuperscript{th} Congress, the PLA lost this representation on the Permanent Secretariat to the Politburo, which is an indication that the PLA is further retreating from political influence to focus on military affairs.\textsuperscript{176}

As the PLA is becoming more professionalized, using less time on political issues, and bifurcating away from the CPC, it has become more acceptable to talk about civil-military relations, rather


than Party-army relations\textsuperscript{177}. A milestone in the development of the civil-military relations was the Government issuance of the 1997 National Defense Law (NDL). Rather than taking directions from the party, the PLA now had a law under which the Government can direct the PLA. The NDL provides an overall legal framework for administering the PLA, and elaborates on organization, duties, construction, and legal responsibilities. It contains specific details on peacetime leadership of the armed forces, the military-industrial and scientific establishment, military education and training. Only in a single clause is the relationship of the army to the Party mentioned (article 19): “The armed forces of the People’s Republic of China are subject to leadership by the Communist Party and CPC organizations in the armed forces shall conduct activities in accordance with the CPC constitution”. Everywhere else in the NDL the subordination to the state is made abundantly clear\textsuperscript{178}. Make no mistake, the CPC is in control of the PLA, but the daily running of the PLA is becoming more and more regulated by law. This means that the Government will be handling the daily business of directing the PLA, but the government will be controlled by the CPC, which will issue the policies on defense matters. Within the PLA, there is still a fundamental requirement of absolute loyalty to the CPC.\textsuperscript{179} However, as the political work is waning, other measures are required to maintain the PLA loyalty to the CPC. Hu Jintao is instrumental in securing the loyalty. As the Chairman of the CMC he has allocated significant annual double digit budget increases to the PLA, taken a personal interest in the living conditions of the officers and soldiers, makes sure they are well fed,\textsuperscript{180} and spends time visiting the various MRs and Headquarters.\textsuperscript{181}

Organizationally, it seems peculiar that the NDL is transferring more influence to the MoD, whilst at the same time the forces remain organized under the CMC, not the MoD. This could be an indication that the organizational development is in a transitional stage, where the MoD may eventually take control of the armed forces. This, however, is likely to take several years, and if the CPC is to remain in control, other mechanisms are likely to be implemented, to ensure Party control of the MoD.

\textsuperscript{178} Ibid, p. 47.
**Change of Military Leadership**

For many decades, promotion of PLA officers was closely linked to the officer’s political work, rather than to his professional and academic qualifications. However, this seems to have changed. The focus for selection of future generals is now more the operational and academic credentials of the officer, and the turnover in promotions is significant. At the 16th National Party Congress (NPC) of the CPC in 2002, approximately 60% of the PLA representatives on the 16th Central Commission (CC) were new. All four directors of the PLA top departments were new, and six out of nine military members of the CMC were new. In 2007, of the representatives chosen to the 17th CC, 66% were new. This is a high level of turnover and it is believed to be so because it prevents any single PLA Commander from becoming too powerful, as they are rotated out of power fairly quickly. Secondly, the percentage of members that are appointed by Hu Jintao is increasing, leading to changes in affiliation and loyalty from the previous chairman Chiang Zemin to Hu Jintao. 60% of the PLA representatives at the 17th CC were appointed from 2005 to 2007 under Hu Jintao. All but two of the 37 most important military leaders, including CMC members, leaders of the four general departments, the four services, the MRs and the top military academy institutions, serve on the 17th CC. This provides an even representation of the services, and also ensures representation by the regional commanders, who are joint warfare commanders and also responsible for the PLA support to the internal security of the country. The quick turnover of members of the CC has brought their average age down from 68 in 1998 to 63 in 2007, which one might assume would lead to a greater propensity towards modernization and new ways of doing business.

Representation by the services has also changed over the last 10 years. In 1997, the combined navy and air force representation in the 15th CC was a mere 16%. However, in 2007, the combined Navy and Air Force representation had risen to 25%. This clearly reflects the growing importance these two services have obtained over the past decade, and also the priorities they have been given in terms of modernization.

Academic credentials are very important to the PLA. Almost all high ranking officers have qualified at the National Defense University, and many high ranking leaders have qualified at the National Defense Science and Technology University. The amount of years an officer is allowed to remain in the same position has been reduced to 10 years, but more than half of them have no more

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than five years of experience in their current position. This rotation principle does not only enhance experience among the officers’ corps, but it also inhibits the creation of a “military strongman” within the PLA.185

**Nepotism and Favoritism**

Paradoxically, the increased focus on professional and academic credentials has not removed nepotism and favoritism, which still remains a part of the PLA culture. Family ties and patron-client relations (e.g. personal secretaries) assist officers of such backgrounds in having a faster track than officers who do not have such backgrounds. Of the current establishment of high ranking generals, there are 30 who are the sons of former PLA marshals or generals or high ranking Party officials.186 At the current CMC the picture is as follows: General Li Jinai is a nephew of Li Jing, a former deputy chief of General Staff; General Wu Shengli is a son of a former vice governor of Zhejiang Province and General Xu Qiliang is son of Xu Letian, former deputy commander of the PLAAF.187 A noticeable appointment was in 2008, when the Deputy Chief of the General Staff for Intelligence, General Chen Xiaogong, was promoted to the post of deputy commander of the PLAAF, under the command of General Xu Qiliang. Chen Xiaogong is a high ranking ground force officer, and it is the first time that an ground force officer has been appointed to a high ranking position within the PLAAF. Chen Xiaogong is a well known “princeling” and the son of the former PRC Ambassador to Japan and the United Nations. He has a long career in military intelligence and has served as a defense attaché at the PRC Embassy in Washington from 2001 to 2003.188

**Party Control of the Army**

The PLA is by far the most powerful force in China, and to the CPC it remains fundamentally important to maintain control of the army. One way of doing this is by Party control of promotions, and even though there is an increased focus on military professional skills, the Party credentials must be in order to receive a promotion. After the Chinese civil war that ended in 1949, many civilian leaders had a close relationship with the PLA because they were political officers during the war. They were closely tied to the PLA leaders who were sons of the revolution and were devoted

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185) Ibid, pp. 55-56.
186) Ibid, pp. 64-69.
Party loyalists. This natural link is now gone and the civilian influence on the PLA through their common history and personal relations no longer exists. Because of this, civilian control of the PLA has weakened. Apart from Vice President Xi Jinping, who has some military experience as he was the personal secretary to Minister of National Defense Geng Biao from 1979 to 1982,\(^\text{189}\) none of the new fifth generation civilian leaders have any experience with military affairs. With a new generation of technocratic military leaders emerging, the Party is aware that control must be maintained. Not only because of the power the PLA holds, but also because the PLA is the main instrument for maintaining control with the population, should the People’s Armed Police fail. The use of military forces against a country’s own population is not without problems, as became evident at the Tiananmen Square crackdown in 1989, where some commanders, units and individual soldiers failed to obey orders. Whilst the military leadership is integrated into the political system, there is only one civilian (chairman of the CMC) in the military system. However, the Party has political commissars posted in every unit in the entire PLA. The objectives of political commissars are to ensure conformity with the party’s political line, that it should serve military modernization, and enhance cohesion of the rank and file.\(^\text{190}\) Years ago political commissars were civilian party representatives, but now the commissars are mostly professional trained officers whose work is that of maintaining the interests of the party.\(^\text{191}\) A uniformed commissar regard himself as first and foremost a soldier. Political commissars normally achieve the same hierarchical status to that of the military commander of the unit to which they are attached, but it is normally the military commander who has the ultimate authority. At every level there is a five member party committee, which practices a one-man one-vote rule. The uneven number of votes gives the commander the final decision authority in the party committee. The three other members can be deputy commanders in charge of administration, operations, training and equipment or deputy commissars responsible for discipline. Issues discussed at meetings must firstly be addressed with the sub-commander responsible for the issue and secondly it must be agreed to put the issue on the agenda of the party committee meeting. In this way issues are given a chance to be resolved under the normal chain of command before they are raised to the committee.

With the 2008-2009 economic downturn, there is a concern among the Chinese leadership that rising unemployment and lack of social security may lead to a rise in social tensions and public


\(^\text{191}\) Ibid, pp. 158-163.
unrest.\textsuperscript{192} To ensure PLA loyalty, there has been an increase in political statements demanding loyalty from the PLA to the Party. In February 2009, the CMC told the military to show absolute obedience to the CPC, reflecting the fear of losing control and that the Chinese leaders are preparing for any potential problems.\textsuperscript{193} The statement said that \textit{China’s national defense had encountered complicated changes in the international and domestic environment and the CMC had strengthened the ideological and political work among all armed forces to maintain PLA support to the Party.} Again in March, Hu Jintao called for the armed forces to \textit{support national interests and social security}, stressing the Communist Party’s leadership of the armed forces. He ordered the PLA to \textit{serve the overall work of the Party and the country, and contribute to the economic development and social stability}.\textsuperscript{194} In May 2009, a document approved by Hu Jintao was issued that pledged a tightening of supervision of senior and middle ranking officers through strict punishment in cases of breach of duty, and also stipulated regular inspection of their work.\textsuperscript{195} The regime is especially targeting commanding ground force officers from Army Group down to Regiment level. These are the same commanders who potentially are to order their soldiers against their own people. The document calls on the officers to keep a communist nature “In the face of a complicated ideological situation, senior officers must stick to their faith and keep a firm political stance”, it states.\textsuperscript{196}

Each of these demands for PLA support to the Party is usually followed by a pledge by the Party to support the military modernization and the building of a new and strong PLA. At the same time, the Party has instigated improvements in the living conditions of the soldiers, improved their messing facilities and food, and also increased their wages by 50\%.\textsuperscript{197} These carrot and stick methods are designed to keep the PLA loyal to the Party and ensure that the Party stays in power.

\textbf{Decision-Making on Military Issues}

The politburo is the organization that holds power in China. However, there is no representation from ministries of power in the Politburo, and in the CMC there is only one civilian representative; the

\begin{itemize}
\item \textsuperscript{194} Chinese Government Website, “President Hu calls for ’Mighty’ support from armed forces for national interests, social stability”, 11 March 2009, (http://english.gov.cn/2009-03/11/content_1257070.htm).
\item \textsuperscript{196} Ibid.
\end{itemize}
rest are generals from the PLA. This means that decision-making on sub-strategic military matters is more or less left to the PLA. Military matters of strategic importance that are elevated to the CMC need the acceptance of Hu Jintao, whereas matters of a more political nature are discussed in the Standing Committee of the Politburo. Under the rule of Mao Zedong, decision-making was highly centralized and concentrated around Mao himself. In times of crisis, Mao often consulted with a small group of senior civilian and military leaders and would go to considerable lengths to persuade some of these individuals to support him. In most instances, Mao was able to make key decisions including authoritative strategic and tactical decisions without much interference from the bureaucracy.198 Today, the decision-making is still highly centralized in a small group of individuals, but President Hu Jintao is not as powerful as Mao Zedong. Hu Jintao still makes the final decisions, but the decision-making process is more group consensus based. Hu Jintao does not, contrary to Mao, have any personal military experience, and this underscores the requirement for Hu Jintao to acquire support for his decisions. For that reason, there has been a major rotation of officers promoted to high positions since 2004, when Hu Jintao became chairman of the CMC, as fast-track promotions generate as sense of loyalty and allegiance. To illustrate this, 60% of the current 65 PLA representatives on the 17th Congress of the Communist Party have been promoted by Hu Jintao.199 These officers are major players in crisis decision-making involving military matters. Today, military leaders do not share close personal ties with civilian leaders as they did in the past, where civilian and military leaders shared experiences from the revolutionary wars. The influence of today’s officers is more achieved through their professional and technical competencies, biased by the personal links and loyalties that are created from fast-track promotions and personal working relations.

**Military Influence on Civilian Policy Diminishing**

The rules of interaction between the Party and the top level of the PLA have changed as well. The only arena for the interaction is the CMC, and the issues on which the PLA has a legitimate right to voice their opinions are more limited, and there seems to be reluctance to do so. There is an increased professionalism in the senior officer corps and a decline in the promotions of officers with a background as political commissars. The PLA tends to focus on military issues and “army building”; it does not interfere in nonmilitary issues, and the creation of the People’s Armed Police

(PAP) in 1983 has disengaged the PLA from internal security functions. The main issue of contention between the military and the civilian leadership is the allocation of funds to the military on the annual defense budget. As it was shown in the previous chapter, the Chinese government has allocated an increasing amount of money to the defense budget over the course of the past decade. Except from 2003-2005, the annual military budget since 1997 has grown at a higher percentage rate than the annual increase in GDP. This means that the allocation of funds to the defense budget has been removed as a potential issue of friction between the civilian and military establishment, which also improves loyalty and allegiance from the military towards the civilian decision makers.

**Summary on the PLA and the Communist Party**

Because of the limited insight we have as to what is going on behind the scenes, it can be difficult to say anything with certainty about the internal discussions about military issues. China’s lack of an organization that can coordinate across the ministries of power is a limitation which could slow down decision-making, and result in uncoordinated decisions. Matters of a military nature are more or less left to the military leaders, and only when military issues are raised to the CMC, is President Hu Jintao as a civilian leader involved. The PLA used to be closely associated with the CPC; however, the official and unofficial links between the Party and the PLA seem to be weakening, which reinforces the trend that the PLA is running military matters independently - outside civilian control. The officers are increasingly rewarded for their professional qualities; however, Party membership is obligatory for officers. The PLA remains loyal to the Party, and the Party has in return kept allocating increasing funds to military spending. More than 60% of the top PLA leaders have been rotated since Hu Jintao took over power in 2004, and the number of representatives from the PLAAF, the PLAN and the 2nd Artillery Corps has increased, reflecting the growing importance of these services, as the PLA adopts a joint operations doctrine.

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Modernization of the PLA Conventional Forces

General
Firmly supported by annual increases in funding, the PLA has embarked on a modernization process, which is meant to support China’s future national strategies and to secure her future national interests. The modernization of the PLA is an all encompassing process, and the PLA is going through a total change of paradigm. The PLA is moving from being an infantry force to a modern high technology force, implementing new doctrine that will fundamentally change the way the PLA fights. A process that in some ways is similar to what happened with the implementation of Joint Doctrine in the United States armed forces, which started with the Goldwater-Nichols Department of Defense reorganization Act of 1986.201 The PLA is still in the beginning of a very long transformation that will last several decades, and we are only beginning to see the contours of the new PLA. In the following chapters, the technological, organizational and doctrinal changes of the services will be analyzed. Following that, a description of the implementation of joint doctrine and training in the PLA, its nuclear forces and the space assets that have been launched to support the new high tech PLA. The PLA has acquired many new weapon systems which will improve PLA fighting capabilities. However, it is important to be aware that there is a time gap between the acquisition of a weapon system and the actual improvement in military capabilities. Military forces have to be trained on the weapon system and in some cases tactical doctrine has to be changed and this takes time. The more advanced the weapon system is, the longer it takes to become good at using it, especially when it comes to new aircraft or navy vessels. The change of the PLA is a long term process and it is supported by a strong prioritization of the Chinese defense industry. A chapter will be devoted to the changes in the military industry, and to the industry’s change of development strategy that is to take the PLA technologically into the next century, closing the gap to the West.

This chapter will shortly address a series of systemic changes that the PLA has implemented, which will not be addressed in the subsequent chapters.

**Chapter 5**

**Force Reductions.**
Historically, the PLA was a large infantry ground force, however, when the Sino-Russian relations improved in the mid-1980’s, the PLA was reduced from 4.2 million in 1985 to 3.2 million. In 1997 and 2003 respectively, the PLA was reduced further by 500,000 and 200,000 personnel. The 2003 reductions were achieved by the end of 2005, and today the PLA is at 2,185,000 personnel. These reductions are important, because a large personnel force also takes a large share of the defense budget. The size of the force has been relatively stable since 1985. However, improved continental security along China’s borders, continued positive trends in the relations with Taiwan, increases in salaries to a higher educated PLA personnel force, and increased expenditures on advanced high tech weaponry, is likely to force the PLA to consider further reductions in the future.

**Conscription**
Conscripts form the basis of the PLA, and conscripts are the pool of personnel from which Non-commissioned Officers (NCO) and officers are recruited. Males aged between 18 and 22 are eligible for conscription; females can volunteer, and are recruited as required by the units. Minimum requirement is middle school graduation, whereas students enrolled in full time education can defer their conscription. In 1999, conscription was reduced from 3 years in the ground forces and 4 years in the PLAN and the PLAAF, to a 2 year conscription period for all services.

As the PLA has become more technologically sophisticated, recruitment of people with higher education is necessary. The PLA has therefore started to target their recruitment effort towards college graduates, to ensure that the personnel have got a sufficient educational background.

**Non-commissioned Officers**
Historically, the only ranks the PLA used were private conscripts and officers, but the modernization of the PLA has put new demands on the PLA. Reductions in the number of conscripts and a reduced conscription time combined, led to a significant reduction in the amount of time the services had well

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trained private soldiers that were useful in the units. This was especially a concern for the technical services, and to compensate and provide a technical skilled pool of soldiers, a professional corps of NCO’s was introduced by the 1999 Military Service Law. The corps of NCO’s was to form a more professional and stable foundation in a military force with ever reducing numbers of conscripts. NCO’s perform duties that were formerly assigned to conscripts, such as assisting officers in small unit leadership. They are also given jobs that were previously held by junior officers, such as mess sergeant, or they are in charge of technical positions, typically responsible for the maintenance and care of a particular piece of electronic equipment. As the PLA is becoming more technological sophisticated, there is a requirement for personnel with higher educational skills, but also for personnel that stays in the PLA for longer than the two years of conscription. The majority of NCO’s are volunteers that apply at the end of their two year conscription. They sign up for an initial three years, and can extend their contract to up to 30 years of service. Priority is given to technical personnel who have received training at a military academy or school. The PLA has also started recruiting graduates from civilian technical schools, employing them directly as NCO’s. There are more than 800,000 NCO’s in the PLA, accounting for nearly half of the rank-and-file, and 60% of the soldiers in high technology units are NCO’s. During their career, NCO’s are given certified professional training, which will also qualify them for jobs when retiring from the PLA. The nature of the NCO corps in the PLA is different from the United States and NATO countries. NCO’s in Western armed forces are generally employed to provide small unit leadership, and not for their technical expertise. In the PLA, personnel with technical skills are given the rank of NCO, whereby they also achieve a higher salary as a reward for their skills. In the West, NCO leadership has proven to be a very important component of a combat organization, and the PLA does not seem to fully exploit this potential of the NCO’s.

**Joint Logistics and Service Support**

The PLA has initiated the development of a computerized Joint Logistics Management System, which

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is to manage peacetime and wartime logistics. The aim is to create an effective logistical system to support peacetime financial management, unit training and to improve wartime logistics. PLA logistics are being developed from an ancient man and horseback transport system to a modern mobile, mechanized and digitalized joint logistical system. The system will be able to communicate in real-time the logistical requirements at front line units, track the supplies in transit, and overall manage and control stock and supplies, using modern logistical management ideas, methods and technologies. The system is to be developed and in place by 2020. The following is an incomplete list of some of the logistical initiatives that have been taken.

**Uniforms and Infantry Equipment**

The PLA has issued new uniforms to the armed forces. It is also in the process of issuing new protective equipment for the individual soldier, such as helmets and body protection. The PLA has also been experimenting with development of specialized protective uniforms using digitalized camouflage and nanotechnology.

**Battlefield Medical Services**

The medical services of the PLA are being modernized. There are three stages of field medical service prior to the evacuation to a major ground force medical facility. Also, the medical services are being re-organized into a brigade – corps structure similar to the field ground force. The PLA is modernizing and digitalizing its medical facilities, including the introduction of a digitalized tag for wounded soldiers that will ensure information about the wounded is transferred with the patient to the next level of medical care. Medical kits for individual soldiers are also being updated.

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Messing

The messing facilities of the PLA have been ignored for many years, but the PLA has improved the messing facilities and the food it serves for the personnel. This was a long overdue requirement, but it is also a part of the effort to make the PLA a more attractive place to work. Also, field messing facilities have been acquired, so that units deployed in the field can get proper food.\(^{215}\)

Civil Servants

In June 2005, the State Council and the CMC jointly promulgated the *Regulations on Non-Military Personnel of the PLA*, and subsequently the CMC promulgated the *Enforcement Plan on Employing Non-Military Personnel*.\(^{216}\) Over the next three years, the PLA employed nearly 20,000 civil servants responsible for areas such as higher education, nursing, medical technology, medicament, libraries, laboratories, engineering, culture and art. This is done in an effort to improve the professional levels of the PLA and support the modernization process.

Outsourcing to Civilian Contractors

The PLA has begun to outsource services of a non-military nature, which will enable the PLA to put greater focus on military operations, and less on support functions of a civilian nature. The areas that are being outsourced are military scientific research, armaments production, building of infrastructure, non-official telephone communication and communication support, storage of general supplies, providing vehicles for official affairs, personnel training, research and teaching of military culture, education of children of servicemen, and maintenance support.\(^{217}\) The management of more than 5000 barracks has been outsourced as well as catering and medical support services.

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Chapter 5

for several hundred thousand people.\footnote{Xinhua, “Chinese officer interviewed on modernizing military logistics service”, 25 December 2007. An exclusive interview with PLA General Logistics Department Deputy Director Li Maifu. Text report by official Chinese news agency Xinhua republished by the BBC Monitoring International Reports, (http://china-defense.blogspot.com/2008/09/bbc-monitoring-international-reports.html).} Outsourcing in general is being computerized, and so is the purchasing of tools, stationary and engineering equipment directly from the civilian sector.\footnote{Martin Andrew, “Modernizing PLA Logistics”, Jamestown Foundation, China Brief, 5 January 2006, (http://www.asian-research.org/articles/2781.html).}

**Summary on Systemic Changes in the PLA**

Implementation of a joint computerized logistical management system is a very complex and cumbersome process. It is expensive, but the PLA is hoping that the investment, along with financial savings from the outsourcing of service support functions to the civilian sector, will lead to a more effective and cheaper logistical system. Whether it will be cheaper is questionable, but it is likely to be more effective. These changes are structural, and they will involve every unit in the PLA, just as the issuing of new uniforms, improvement of messing facilities, medical support and implementation of NCO’s in every unit. This will give every unit, every soldier in the PLA a feeling that a new time is coming.

The following chapters will describe the changes that are taking place in each of the services.
Modernization of the PLA Ground Forces

General
The PLA ground force is the main component of the PLA, and has for years been the predominant service responsible for the territorial sovereignty of China. Contrary to the navy and air force, the ground forces have no leading body, but are led by the General Staff Department of the PLA\(^{220}\). The vast majority of officers in high positions in the PLA are ground force officers, which is why ground force officers have a high degree of influence on the future development of the PLA. The size of the ground forces are about 1.6 million,\(^{221}\) and in addition to the ground forces, the PAP is estimated to number from 660,000 to one million personnel.\(^{222}\) In addition approximately 510,000 reserve forces\(^{223}\) are organized into 30 infantry, 3 artillery, 12 air defense divisions and approximately 25 brigades including 7 logistic support brigades.\(^{224}\) The operational missions and requirements for the ground forces are to provide:\(^{225}\)

- Forces capable of domestic control and service support operations throughout the country. This includes support to the Communist Party, control with the population and support during extreme weather conditions, earth quakes etc.;
- Forces capable of conducting defensive operations along the vast land and sea border;
- Forces capable of conducting amphibious and airborne/air mobile operations against Taiwan;
- Forces capable of conducting heavy mobile operations into potentially unstable areas on China’s periphery, in order to protect economic interests and;
- Units and personnel capable of supporting global military-to-military exchange programs, UN peacekeeping operations, arms sale support and foreign military training programs.

\(^{220}\) There are four departments, the General Staff Department, the General Logistics Department, The General Armaments Department and the General Political Department. The Chief of the General Department is responsible for plans, intelligence and operations.


These missions are very different, and are challenging for the PLA ground forces since they require different types of forces. On the one hand, the PLA is required to support the task of maintaining domestic control in all provinces in case the PAP, in conjunction with the civilian police force controlled by the Ministry of Public Security, are not capable of controlling the population. This requires sufficient light infantry division/brigades stationed throughout the country. These forces also support a defensive posture along the land border. On the other hand, the ground forces are required to provide forces capable of conducting amphibious, airborne/airmobile as well as heavy mobile operations. Forces designed for these tasks are specially trained and equipped with modern tanks, IFV and specialized amphibious equipment. Equipping and training such forces is extremely expensive, and the ground forces are short on funds, particularly when required to support this, while also maintaining a large infantry force.

**Ground Force Restructuring**

The ground forces consist of 18 Group Armies (GA), often composed of the eight service arms; infantry, armor, artillery, air defense, aviation,226 engineering, chemical defense and communications, as well as other specialized units, such as Electronic Counter-Measures (ECM), reconnaissance and mapping. The ground force has been moving from a regional defense force to a force with what the Chinese call “trans-regional mobility”,227 which in essence is a mobile ground force capable of operating in other provinces than its home province. Prior to the current restructuring, the ground force was organized in a GA – Division – Regiment structure, based on former Soviet organizational principles, designed for large conventional warfare in case of an attack from the Soviet Union in the 1970-80’s. In that organization, the Division was the decisive organization, and it was organized with all the arms of the ground forces (infantry, tanks, artillery, engineers etc.), and capable of executing combined arms warfare.228 Regiments under the division were the basic tactical echelons that executed orders. Battalions under regiments had no planning capability, and were led by the battalion commander personally.229 This type of organization, with large tactical echelons, is useful in the type of large conventional battles expected during the cold war. The Iraqi Army used this type of organization

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226) Not all Group Armies have aviation units.
228) Combined arms is warfare coordinating arms organic to the Army such as armor, infantry, artillery, engineers etc. Joint warfare on the other hand is when coordination goes across the services, Army, Air Force, Navy and 2nd Artillery.
during the 1991 Gulf War, where it was also demonstrated how vulnerable this type of organization is to modern joint network centric warfare and precision air power.

The Chinese studied this war for some years, and by the end of the 1990's they decided to mechanize, modularize and informationize the ground forces. The PLA ground forces began a series of pilot projects, where a number of units and research institutes were tasked with experimenting and developing new combat formations and new C2 structures. A new ground force doctrine was to redesign combined arms warfare and integrate the ground forces into joint operations with the other services. In parallel, the PLA developed a new joint Command, Control, Communication and Computers, Information Surveillance and Reconnaissance (C4ISR) system to support the newly developed organizational battle structure and the new doctrines.

In peacetime the ground forces are organized in GAs with divisions or brigades, but the PLA ground forces are experimenting with modularized concept for its wartime organization, creating temporary battle groups within a division or a brigade. The battle groups are flexibly created from modules of armor, infantry, artillery, army aviation etc., based on the operational requirements for the particular operation. Brigade or battalion headquarters are designed so that they can plan operations and direct the forces that they are allocated.

The PLA ground forces have been restructuring for some time, and are still experimenting with new organizational structures. In 2007 and 2008 the PLA began to report from exercises which experimented with the temporary battle groups, which suggests that the experiments are still in the early stages, and that they still have far to go.

The Military Regions (MR)

Many sources on the PLA ground forces discuss the changes of the forces as if they are taking place throughout the organization. This is by no means the case. The ground forces are very different across the MRs, with variations in size, organization, equipment and level of modernization. In the following, these differences in the ground forces will be identified and set in a strategic security political context applicable for the particular MR. This is an attempt to provide a more nuanced analysis of the ground forces and an assessment of its capabilities.

The PLA is very secretive in general and not much information is provided on the organization of the GAs. The information below on the GAs is a synthesis of information that has been acquired from

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the excellent work of Dennis J. Blasko in “The Chinese Army Today; Tradition and Transformation for the 21st Century”\(^{233}\), Roy Kamphausen and Andrew Scobell “Right Sizing the People’s Liberation Army: Exploring the Contours of China’s Military”, “The Military Balance 2009” from the International Institute for Strategic Studies and the website Sinodefence.com. In addition, the information has been either verified or amended by two years worth of information collected from Chinese military sources. These sources often try to obscure the organizational origin of the units, but combined with the above mentioned sources, an organizational structure can be identified, albeit still with some uncertainty. One of the difficulties that has been encountered is determining where key assets such as Army Aviation Regiments, Special Operation Forces, Electronic Warfare units, Psychological Operations units are organized. In some MRs they are kept under the MR, whereas in other regions they are organized under the GA.

*Rapid Reaction Units (RRU).* The conventional wisdom among western experts on the PLA ground forces is that a number of units are designated as RRU. In its 2009 report to Congress on the Military Power of the People’s Republic of China, the U.S. Department of Defense designates some units as RRU without clarifying the criteria for this selection. When analyzing the organizational structure of these units, most of them, but not all, can be identified as being stronger than others (more armor, mechanization), but PLA published information on these units does not confirm the existence of RRU units. A leading expert on the PLA ground forces, Dennis J. Blasko, contends it is true that the PLA in previous decades designated some units as RRU within the MR, and they were the first to be deployed either in the local area or out-of-region in times of emergency. But as the ground forces have become smaller and more mobile, “rapid reaction”, is the basic task practiced by all units.\(^{234}\)

The PLA may have designated units as RRU, but in the research that has led to this book, this has not been verified by information issued from PLA or other Chinese sources. It is evident that some units are stronger and more mobile, but the exact composition, designation and state of alert of possible ground force RRU is unclear.

\(^{233}\) During the review process Dennis J. Blasko kindly provided an updated version of the original book, which contains the most resent information on the PLA ground force organization that he had available in October 2009.

The PLA ground force is divided into seven MRs, which serve as ground force regions as well as joint operational areas for the joint operations. China is a very large country, and the MRs face different challenges in terms of potential enemies, terrain and climate, and they are therefore organized differently to match the different tasks and challenges. As the ground force is restructuring and changing its organization, some divisions and regiments are either abolished or transformed into brigades and battalions. In addition, battalions that may be identified in the peacetime structure may appear in a wartime scenario in a completely different organization due to the modular design of battle formations at battalion level. Therefore, the organization that is listed below is a peacetime structure in which GAs, Division and Brigades may exist in wartime, but everything below that organizational size is likely to be designed for the task at hand. The size of every GA is different, based on its composition and task. The following are approximate number of troops in each type of unit.

<table>
<thead>
<tr>
<th>Unit</th>
<th>Group Army</th>
<th>Division</th>
<th>Brigade</th>
<th>Regiment</th>
<th>Battalion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>30,000 – 50,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infantry</td>
<td>10,000</td>
<td>5,000-6,000</td>
<td>2,800</td>
<td>700</td>
<td></td>
</tr>
<tr>
<td>Armor</td>
<td>8,000</td>
<td>2,000</td>
<td>1,200</td>
<td>175</td>
<td></td>
</tr>
<tr>
<td>Artillery</td>
<td>5,000 – 6,000</td>
<td>2,200</td>
<td>1,100</td>
<td>275</td>
<td></td>
</tr>
<tr>
<td>AAA</td>
<td>5,000</td>
<td>2,000</td>
<td>1,000</td>
<td>250</td>
<td></td>
</tr>
</tbody>
</table>

*Table 1. Estimated personnel numbers in the Ground Force organizations,
Source: Dennis J. Blasko, “The Chinese Army Today; Tradition and Transformation for the 21st Century”.*

The following pages list the forces associated to each of the MRs. It only shows forces attached to GAs and forces subordinate to MR or Military Districts (MD), however there are also a significant number of border defense units, logistical sub-departments and reserve units under each MR.

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235) Ibid p. 43.
Chengdu MR

The Chengdu MR in South Western China borders India, Nepal, Bhutan, Laos, Myanmar and Vietnam. In addition, the Chengdu MR is responsible for the important Tibet MD, in which the PLA is an important tool in suppressing any threats to the CPC rule in the region. The Tibetans in this area seek a higher degree of autonomy from Beijing rule. To control the area as well as the border, the Tibet MD is allocated three mountain trained infantry brigades, an artillery brigade as well as Special Forces. The terrain in Chengdu MR varies significantly. To the west, Tibet has high plains and mountains posing difficult operational conditions, and low levels of oxygen are a major concern for operational effectiveness. The Sichuan area is also challenging with mountains as high as 7590m.

Figure 1: Chengdu MR

In the south part of the Chengdu MR, the Yunnan area offers very different and challenging conditions for military operations, with a broad plateau of 2300m altitude, deep, hot and humid valleys, huge forests and even jungle. These conditions are very challenging for military operations, and require special training and equipment for the two GA in the region. The units of Chengdu MR that operate in mountain areas are developing techniques to counter altitude sickness, and are developing special oxygen pressurized vehicles that will enable prolonged operations at high altitude.

13th GA, Chongqing, Sichuan
37th Motorized Infantry Division
149th Mechanized Infantry Division
UI\textsuperscript{240} Armored Brigade
UI Artillery Brigade
UI AAA Brigade
UI Engineer Regiment\textsuperscript{241}

14th GA, Kunming, Yunnan.
31st Motorized Infantry Division
40th Motorized Infantry Division
UI Armored Brigade
UI\textsuperscript{242} Artillery Brigade
UI Air Defense Brigade
Communication Regiment
Engineer Regiment\textsuperscript{243}

Chengdu MR/MD subordinate units
52nd Mountain Infantry Brigade
53rd Mountain Infantry Brigade
54th Mountain Infantry Brigade
“Cheetah” Special Operations Dadui
Electronic Warfare Regiment
1st Technical Reconnaissance Bureau
2nd Technical Reconnaissance Bureau
2nd Army Aviation Regiment
Chemical Defence Technical Group

13 GA is, with its predominance of motorized and mechanized infantry, a relative light GA, which suggests a defensive orientation. 149 Mechanized Division is a key unit in the Chengdu MR. As a mechanized division it has IFVs and tanks, which gives it a high level of mobility. As the 13th GA uses a divisional organization, it does not seem to have been central in the development of new doctrine for the ground force. It is more likely a defensive unit trained to operate in the complex terrain of the Chengdu MR, which includes high altitude terrain, mountains, as well as jungle in the Yunnan province.

\textsuperscript{240} UI: Unidentified.
\textsuperscript{242} China-Defence-Mashup.com identifies this unit as 4th Artillery Brigade. It was identified on Chinese CCTV television, but it cannot be confirmed from other sources. (http://www.china-defense-mashup.com/?page_id=1873).
14 GA with its two infantry divisions is defensively oriented, and is most likely specialized for the mountainous and jungle environment in the Yunnan area.

In a strategic context, the defensive composition of both 13 GA and 14 GA reflects the good relationship that China has with Vietnam, Myanmar, Laos, Nepal and Bhutan. China and India still disagree on the delineation of their border, but the PLA has only deployed a defensive infantry force in the area, a force that is also involved in maintaining control with the Tibet area. Should problems arise with India over the border issue, reinforcements from other MR would be required.

**Lanzhou MR**

![Map of Lanzhou MR](http://example.com/lanzhou_map.png)

The Lanzhou MR in the North Western China borders Mongolia, Russia, Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan, Afghanistan, Pakistan and India. The area is mainly a large plateau, desert and mountains, and extremely inhospitable in winter with snow more than seven months a year. China has constructed a highway between Xinjiang and Tibet that will have military importance in case of conflict.

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The major oil reserves in the Xinjiang province are of crucial strategic interest to China, and the domestic security in the area is a major concern. Beijing control and rule of the Xinjiang region is disputed by the East Turkestan Independence Movement, and the PLA is instrumental in Beijing maintaining control with the area if the PAP cannot control the population. For this purpose, the Xinjiang MD in itself has large military forces, as seen below, which are light and mainly suitable for defensive operations and for maintaining internal control with the Xinjiang region. There are two GAs in the Lanzhou MR:

**21st GA, Baoji, Shaanxi**
- 61st Motorized Infantry Division
- 12th Armored Division
- UI Artillery Brigade
- UI Air Defense Brigade
- UI Communication Regiment
- UI Engineer Regiment

**47th GA, Lintong, Shaanxi**
- 55th Motorized Infantry Brigade
- 56th Motorized Infantry Brigade
- 139th Mechanized Infantry Brigade
- UI Armored Brigade
- UI Artillery Brigade
- UI AAA Brigade
- UI Communication Regiment
- UI Engineer Regiment

**Lanzhou MR/MD subordinate units**
- 4th Infantry Division, Xinjiang MD
- 6th Mechanized Infantry Division, Xinjiang MD
- 8th Motorized Infantry Division, Xinjiang MD
- 11 Motorized Infantry Division, Xinjiang MD
- 3rd Army Aviation Brigade, Xinjiang MD
- UI Electronic Warfare Regiment
- UI Anti-Air-Artillery Brigade
- UI Artillery Brigade, Xinjiang MD
- "Tiger" Special Operations Dadui
- UI High-Technology Reconnaissance Bureau
- Chemical Defense Regiment

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248) Ibid.
The Lanzhou MR only has two GAs compared to other MR with three GAs. In peacetime the two GAs are garrisoned in the eastern more populated and hospitable part of Lanzhou MR. During the Cold War period, with tension between China and the Soviet Union, this position enabled the PLA ground force to take advantage of the strategic depth of the country in case of an attack from the Soviet Union; however, this issue is not relevant today with a developing Sino-Russian strategic partnership.\textsuperscript{249} The GAs are located in the populous part of the MR, and are therefore conveniently available for maintaining domestic control in that part of the region if required. The fact that there are only two GA in Lanzhou MR, and that mainly infantry forces are allocated to the Xinjiang MD for provincial control, suggests that the ground force is in a defensive posture in this region. Strategically, this corresponds well with the good relations China has with its neighbors in this region, many of whom are fellow members of the Shanghai Corporation Organization (SCO). Even though the U.S. Department of Defense in its 2009 report to Congress on the People’s Liberation Army characterizes the 21\textsuperscript{st} GA as an offensive mobile force,\textsuperscript{250} with only one motorized infantry division and one armored division it is not a strong GA; in fact a lot less strong than other GA in the Beijing, Jinan and Nanjing MRs. If major offensive operations were to be conducted from the Lanzhou MR, it would require reinforcements from other MR.

The 21\textsuperscript{st} GA is organized in the old division-regiment-battalion structure, which suggests that it has not yet been reorganized into the new structure, but the GA is involved in other modernization projects. In February 2009, the 61\textsuperscript{st} Motorized Infantry Division organized a combined fire assault group using a computer networked C2 platform at division, regiment and battalion levels. The units used Unmanned Aerial Vehicles (UAVs) to provide target acquisition and damage assessment.\textsuperscript{251}

All units in the 47\textsuperscript{th} GA are organized in the new brigade structure, which suggests that the 47\textsuperscript{th} GA is involved in the development of organizational change of the PLA ground force. Also, the 139 Mechanized Infantry Brigade of the 47\textsuperscript{th} GA has been experimenting with desert warfare.\textsuperscript{252}

In the Xinjiang MD, border patrols use digitally networked remote sensing, satellite navigation and wireless transmission methods to control the border.\textsuperscript{253} Border patrols, under the border defense units, does not have the same operational requirements for a C2 system, as a complex battle group, but it

\textsuperscript{249} Xinhua, “China, Russia sign five-point joint statement”, 18 June 2009, (http://www.china.org.cn/international/2009-06/18/content_17970275.htm).
does suggest that the PLA at least has developed a basic computerized C2 systems with navigation, communication and display capabilities mature enough for operational use down to patrol level.

**Beijing MR**
The Beijing MR holds the capital of China and is a key political center. The Beijing municipality has a population of 17.4 million people, and maintaining law and order is a key task for the PLA when the police and People’s Armed Police are not able to manage the situation, as it was seen when ground forces from the Beijing MR participated in the crackdown on demonstrators at Tiananmen Square in 1989.254

Beijing itself is located on the North China Plain. The Xishan Mountains run north of the city, along with the Great Wall of China, stretching across China. North of the mountains is the inner Mongolian plateau at a height of 1000m above sea level. This plateau is where the Zhurihe (Juhr) Combined Arms Training Base is located,255 which is hosting many large scale joint exercises between the PLA ground force and the PLAAF.

![Beijing MR Map](image)

**Figure 3: Beijing MR**256

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Chapter 6

There are three GAs in the Beijing MR supported by a very robust Beijing MD, organized with two infantry divisions.

**27th GA, Shijiazhuang, Hebei**
- 80th Motorized Infantry Brigade
- 82nd Motorized Infantry Brigade
- 188th Mechanized Infantry Brigade
- 235th Mechanized Infantry Brigade
- 7th Armored Brigade (Blue force for the Zhurihe Combined Arms Training Base in the Inner Mongolia)
- UI Armor Brigade
- UI Artillery Brigade
- UI AAA Brigade
- UI Engineer Regiment

**38th GA, Baoding, Hebei**
- 112th Mechanized Infantry Division
- 113th Light Mechanized Infantry Division
- 6th Armored Division
- 6th Artillery Brigade
- UI Mechanized Air Defense Brigade
- 8th Army Aviation Regiment
- UI Engineer Brigade
- UI Chemical Defense Regiment

**65th GA, Zhangjiakou, Hebei**
- 193rd Motorized Infantry Division
- 194th Motorized Infantry Brigade
- UI Motorized Infantry Brigade
- UI Armored Brigade
- 14 Artillery Brigade
- UI Artillery Brigade
- UI Air Defense Brigade
- UI Engineer Brigade

**Beijing MR/MD subordinate units**
- UI Peacekeeping Engineer Brigade

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258) Ibid.
259) Ibid.
260) Ibid.
UI AAA Brigade
“Seal” Special Operations Dadui
Engineer Water Supply Regiment

Beijing Garrison District
1st Garrison Infantry Division (Provides guards and patrols for Beijing city)
3rd Garrison Infantry Division

Tianjin Garrison District
196th Infantry Brigade
1st Armored Division

27th GA has been reorganized into a pure brigade structure with two motorized, two mechanized and an armored brigade. It is a light organizational structure well suited for urban warfare and defensive operations around Beijing. The 7th Armored Brigade is known to be used as a Blue Force (enemy) exercise participant in exercises held in Inner Mongolia.

The organizational structure of the 65th GA is ambiguous. Firstly, it is organized with one motorized infantry division and two brigades, which suggests that the divisions are transitioning to brigades. Also, its Armored Division and its 14th Artillery Division are in some literature listed as brigades. These differences in structure suggest that the 65th GA is in transition towards the new brigade structure. With its motorized infantry it is a defensive force, well suited for urban warfare and defensive operations.

38th GA is one of the highest priority GA in the PLA. With two mechanized infantry divisions, an armored division and an organic Army aviation unit, it is a very powerful GA well designed to reinforce other MR in case of a crisis, and is located with equal distance to North Korea and Taiwan. 38th GA has kept its divisional structures, which leaves the 38th GA as a very large and strong unit. In June 2008, the 6th Armored Division was the first PLA unit to be fully equipped with Chinese made tanks, armored vehicles and artillery, and in August 2008 an armored regiment of one of the two mechanized divisions in the 38th GA achieved Initial Operational Capability on Type 99 tanks after two years of training on the tank. The mechanized divisions have been training the new modular “combined battalion” concept, which included elements of tanks, armored infantry, artillery, anti-chemical
reconnaissance, air defense missiles systems, logistical and medical support. This suggests that 38th GA is experimenting with a modular design of its combat organization with battalion sized units within the existing brigades or regiments as the basic tactical structures. One of the mechanized divisions of the 38th GA has been experimenting with the inclusion of an Air Liaison Officer (ALO) in its divisional and regimental command posts, providing procedural control of air forces in support of land operations. It should be noted, that this is the only information available on PLA practicing air support to ground operations, which suggests that the PLA is only just starting to experiment with it now.

In case of a crisis somewhere in China, the 38th GA is as a very powerful GA, a clear candidate for reinforcement of other MR.

**Shenyang MR**

The Shenyang MR borders Russia and North Korea. In case of a Korean war or an internal collapse of the North Korean military, forces of the Shenyang MR will probably be the first Chinese forces to become involved. The Sino-Korean border runs through the Chanbai Mountains range along the Yalu River. The area is mountainous and very difficult for military operations.

The climate is a monsoon-influenced humid continental climate with warm (+30°C) summers and cold winters (-30°C). There are three GA in the region together with nine border defense regiments.

**16th GA, Changchun, Jilin**
- 46th Motorized Infantry Division
- 69th Motorized Infantry Division
- 48th Motorized Infantry Brigade
- 68th Motorized Infantry Brigade
- 4th Armored Division
- UI Artillery Brigade
- UI AAA Brigade
- UI Engineer Brigade

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266) Roy Kamphausen and Andrew Scobell, “Right Sizing the People’s Liberation Army: Exploring the contours of the Chinese military”, Strategic Studies Institute, September 2007, p.360-361.
**Modernization of the PLA Ground Forces**

**39th GA, Liaoyang, Liaoning**
- 115th Mechanized Infantry Division
- 116th Mechanized Infantry Division
- 3rd Armored Division
- 190th Mechanized Infantry Brigade
- UI Artillery Brigade
- UI Air Defense Brigade
- 9 Army Aviation Regiment
- UI Chemical Defense Regiment

**40th GA, Jinzhou, Liaoning**
- UI Motorized Infantry Brigade
- UI Motorized Infantry Brigade
- 5th Armored Brigade
- UI Artillery Brigade
- UI AAA Brigade
- UI Engineer Regiment

**Shenyang MR/MD subordinate units**
- 191st Motorized Infantry Brigade
- UI Electronic Warfare Brigade
- UI High-Technology Reconnaissance Bureau
- UI Special Operations Dadui.

**Figure 4: Shenyang MR**

16th GA with two motorized infantry divisions, two motorized infantry brigades and an armored division is an infantry heavy unit. The unit is trained for mountain operations, and is mainly organized for defensive operations along the mountainous eastern part of the Sino-Korean border.

40th GA with three mountain trained motorized infantry brigades is also a light defensive unit.


which will most likely be tasked with securing the western part of the Korean border. 40th GA was one of the first units to be organized in the new brigade structure, and has spent approximately ten years developing its new operational doctrine.271 It should be noted that a GA with an all brigade structure is more like a Western army division than a corps, which formerly was equivalent to a GA.

39th GA is the main source of strength in the Shenyang MR. It contains two mechanized divisions and a mechanized brigade. Its 3rd armored division has a regiment equipped with the newest T-99 Main Battle Tank,272 and is a very powerful GA, similar to the 38th GA of the Beijing MR. It has an organic Army aviation regiment, with which it is developing tactical doctrine for air assault and helicopter fire support.273 In case of a Korean war or a collapse of the government in North Korea, and if the Chinese government decides to intervene in North Korea, the 39th GA would be the obvious choice to cross the Yalu River and move south into North Korea. It is a heavily armored and mobile unit that could be very hard to stop. In case of a crisis elsewhere in China, the 39th GA could theoretically reinforce other regions, but as long as the situation in North Korea is unstable, it is unlikely that this unit will leave Shenyang MR.

The Jinan MR does not border any other country, and the PLA ground force in the region does not face any continental strategic issues of concern, apart from domestic stability. In spite of this, the Jinan MR has three GA, which are all powerful and mobile. Units from the Jinan MR annually participate in month long cross-regional exercises with long distance deployments to Central or Northern China, simulating strategic deployments and training of advanced joint and offensive operations in adverse electromagnetic environments. In 2007, Jinan MR was appointed to spearhead PLA development of a large-scale Joint Logistical Service system, which is to be implemented across the PLA. Therefore, the three GA of the Jinan MR are organized, trained and have the logistic capacity to function as the strategic reserve of the PLA.

The three GA are:

**20th GA, Kaifeng, Henan**
- 58th Light Mechanized Infantry Brigade
- 60th Motorized Infantry Brigade
- UI Armored Brigade
- UI Artillery Brigade

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UI AAA Brigade
UI Engineer Regiment

26th GA, Weifang, Shandong
8th Armored Division
77th Motorized Infantry Brigade
138th Motorized Infantry Brigade
199th Motorized Infantry Brigade
8th Artillery Brigade
UI Air Defense Brigade
7th Army Aviation Regiment

54th GA, amphibious operations, Xinxiang, Henan
127th Mechanized Light Infantry Division,
162nd Motorized Infantry Division,
160th Motorized Infantry Brigade
11th Armored Division
UI Air Defense Brigade
UI Artillery Brigade
1st Army Aviation Regiment

Jinan MR/MD subordinate units
UI Electronic Warfare Regiment
UI Anti-Chemical Regiment
3 Technical Reconnaissance Bureau,
91 Ponton Bridge Regiment276
UI Ponton Bridge Regiment277
“Mighty Eagle” Special Operations Dadui

All units of the 20th GA are brigades. They are trained for long distance deployments and are a part of the strategic reserve. The newly developed capabilities of the units were demonstrated when the 58th Light Mechanized Infantry Brigade participated in exercise “Sharpening 2008”, held in August 2008.278 During the exercise, the brigade used some of the new battle formations that the PLA is ex-

perimenting with. As a part of the exercise, the brigade made a long distance deployment from Jinan MR to the Zhurihe Combined Arms Training Base on the Inner Mongolian grasslands in Beijing MR, where the month long exercise was held. The exercise finished with a confrontation exercise “Warrior 2008”, in which the brigade performed defensive operations against an armored tank regiment. The 58th Light Mechanized Infantry Brigade exercised a concept for combined arms reconnaissance teams, where infantry, artillery, AAA, engineers and anti-chemical units would combine their reconnaissance units and share the information on a common intelligence information network. Temporary Battle Groups were formed comprising infantry, artillery, anti-aircraft artillery, engineering and anti-chemical sub-units, and the unit experimented with new operational planning procedures for the development of combat plans in an attempt to improve decision making, planning and execution of operations. For the first time, the battle group also incorporated an intelligence officer (J2) of the brigade, who was responsible for gathering, interpreting and disseminating intelligence information to subordinate units. The fact that it was the first time this capability was used suggests that it is still at an experimental stage.

26th GA is, apart from 8th Armored Division, organized in the brigade structure, reinforced with an organic Army Aviation Regiment. Its units are trained for complex terrain. Its three infantry brigades are motorized and not mechanized, which means that the 26th GA is the least powerful of the three GA in the Jinan MR. However, the 26th GA has an organic Army Aviation Regiment, which suggest that it has been given other capabilities, such as air assault and air mobile operations.

54th GA is the largest and most powerful of the three GA in the Jinan MR, and is a key strategic reserve in the PLA. It is organized and trained for amphibious operations and is highly mobile. The amphibious training suggests that the 54th GA is designated to reinforce Nanjing MR in case of a Taiwan crisis, but it is also excellently located for an amphibious operation on the coast of the Korean peninsula in case of a Korean war. The 127th Light Mechanized Division has a fast response ability as it was among the first units to arrive in the area of the Chengdu earthquake in May 2008. 127th Mechanized Infantry Division is, as a priority unit, receiving new equipment such as digitalized mobile command headquarters.

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at least at regimental level, and also PLL05 – 122 mm self-propelled mortar-howitzers.284 The ground
forces in Jinan MR comprise the strategic reserve. They are well trained and ready to deploy over long
distances at short notice using road, rail and air transport. In case of a crisis, it would therefore be a
strategic indicator of the Chinese government’s intentions, if units from the Jinan MR were deployed.
During crisis and war the command of the Jinan MR is designated to take central command of the PLA,
should the CMC headquarter cease to function.285

Nanjing MR

With its location opposite Taiwan, the
Nanjing MR is likely to be the main
region responsible for PLA ground force
operations during a potential Taiwan cri-
sis. There are three GA in Nanjing MR,
and they are all trained and organized
for amphibious operations, including
complex terrain capabilities. Nanjing
and Guangzhou MR are the only MR
which have organic surface-to-surface
missile brigades. All other short-range
ballistic missile brigades are subordi-
nate to the 2nd Artillery Corps. Nanjing
MR is located in a very populous area
of China that includes Shanghai, one of
the largest cities in China. Accordingly,
the GA in the Nanjing MR has signifi-
cant domestic security responsibilities
as well.

Figure 6: Nanjing MR286

There are three GA in the Nanjing MR:

**1st GA, amphibious operations, Huzhou, Zhejiang**
- 1st Amphibious Mechanized Infantry Division
- 10th Armored Division
- 3rd Motorized Infantry Brigade
- 9th Artillery Division
- Ul Air Defense Brigade
- Ul Engineer Regiment

**12th GA, offensive, complex terrain, amphibious operations**
- 12th Armored Division
- 34th Motorized Infantry Brigade
- 36th Motorized Infantry Brigade
- 179th Motorized Infantry Brigade
- Ul Artillery Brigade
- Ul Air Defense Brigade
- Ul Engineer Regiment

**31st GA, amphibious operations, Xiamen, Fujian**
- 86th Motorized Infantry Division
- 91st Motorized Infantry Division
- 92nd Motorized Infantry Brigade
- Ul Amphibious Armored Brigade
- Ul Artillery Brigade
- Ul Air Defense Brigade
- 10th Army Aviation Regiment

**Nanjing MR/MD subordinate units**
- 5th Army Aviation Regiment
- 1st Surface-to-surface Missile Brigade
- 31st Ponton-Bridge Brigade
- Chemical Defense Regiment
- “Flying Dragon” Special Operations Dadui

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289) Ibid.
The GAs of Nanjing MR have been involved in the modernization process of the ground force. They are equipped with mobile and digitalized290 C2 capable of directing both land and amphibious operations, which implies joint connectivity of the command facility. Units are equipped with modern C2 IFV.291 Doctrinally, they have been experimenting with delegating artillery fire authority down to battalion level to improve responsiveness.292 They have also acquired computerized laser simulation training ranges to improve realism in their training.293

1st GA with the 1st Mechanized Amphibious Infantry Division is an elite unit with very powerful amphibious capability.294 Together with its sister unit, the 124th Amphibious Mechanized Infantry Division of the Guangzhou MR, these divisions are equipped with Type-97 amphibious IFVs and tanks, making them very suitable for being in the first wave of an amphibious operation, i.e. in an invasion of Taiwan. The 1st GA is equipped with the new PHL03 Multiple Launch Rocket System,295 which has 12 tubes of 300mm rockets with a range said to be 150 km, enabling it to strike at Taiwan from the mainland.296

The 12th GA is the least powerful of the three GA in the Nanjing MR, as it has brigades, not divisions. It is motorized infantry, not mechanized, and it has no organic Army aviation. It does have an armored division equipped with the upgraded Tank Type 096G, and the GA is trained for complex terrain and amphibious operations. This suggests that the 12 GA would be a follow-on force in the second or third wave of an amphibious operation. The brigade structure of the GA shows that the GA has been through modernization and has adopted the modularized ground force approach with digitalized C2.

The 31st GA is a very powerful unit, and with the only amphibious armored brigade in the MR, it is likely to be in the first wave of an amphibious operation, supported by its organic Army aviation brigade. The GA has new equipment and is trained in new tactical doctrine for offensive operations.297

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Units are equipped with tactical internet all the way down to battalion level, connecting C2 with combat units, reconnaissance, fire support and logistics. All information about this GA indicates that it is involved in the development and enhancement of tactics and combat skills.

**Guangzhou MR**

The Guangzhou MR borders Vietnam, with whom China has a friendly relationship, with the two countries having recently settled their land border disputes. In spite of this, the two GA in the Guangzhou MR, the 41st and 42nd GA, both have an offensive disposition and are trained for complex terrain and amphibious operations. This of course indicates that these units are designated to participate in an amphibious operation against Taiwan, and potentially also in smaller operations on the Spratly Islands in the South China Sea. The PLAN South Sea Fleet is headquartered in Zhanjiang, Guangdong and operates out of bases in Hainan and Guangdong, which is in the Guangzhou MR, and if the ground force were to support island operations in the South China Sea, it is likely that it would be the amphibiously trained forces in the Guangzhou MR. This is only likely to happen if the requirement for forces exceeds the two PLAN marine brigades stationed in Zhanjiang.

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**Figure 7: Guangzhou MR**

41 GA, amphibious operations, Liuzhou, Guangxi

- 121st Motorized Infantry Division
- 123rd Mechanized Infantry Division,

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UI Armored Brigade
UI Artillery Brigade
UI Air Defense Brigade
UI Engineer Regiment 299

42nd GA, amphibious operations, Huizhou, Guangdong
124th Amphibious Mechanized Infantry Division,
163rd Motorized Infantry Division
UI Armored Brigade
UI Artillery Division
UI Air Defense Brigade
“South China Sharp Sword” Special Operations Dadui

Guangzhou MR/MD subordinate units
132nd Infantry Brigade
2nd Surface-to-surface Missile Brigade
6th Army Aviation Regiment
32nd Ponton Bridge Brigade
UI Electronic Warfare Regiment
UI Technical Reconnaissance Bureau,

The PLAAF 15 Airborne Corps, strategic forces
43 Airborne Division,
44 Airborne Division,
45 Airborne Division,
UI Special Operations Forces unit

41st GA is amphibiously trained, and its 123rd Mechanized Infantry Division is a priority unit trained for mountain operations as well as amphibious operations, and is being equipped with the amphibious Type-97 IFV. 300 Contrary to the GA of the Nanjing MR, the GA of Guangzhou MR is organized with armored brigades and not divisions. This could be because the terrain in the region in general does not favor the use of heavy armor.

42nd GA is comprised of an amphibious mechanized infantry, a motorized and an artillery division, supported by an armored brigade. Similarly to the 41st GA, this makes it more light and suited for amphibious operations. The 124th Mechanized Infantry Division is an elite unit equipped with Type-97 amphibious IFV. 301

300) Jane’s Sentinel Security Assessment, China and Northeast Asia, “Procurement”, subchapter “New Infantry Fighting Vehicle (IFV) – Type 97 (Also known as ZBD-97)”, 18 June 2009.
301) Ibid.
The Guangzhou MR has retained control of the 6th Aviation Regiment and a Surface-to-Surface Missile Brigade, similar to the Nanjing MR.

It is interesting that GAs from both the Nanjing MR and the Guangzhou MR are trained and equipped to participate in a Taiwan Operation. Doctrinally, the PLA should only designate one MR headquarters to be the joint headquarters, and as the Nanjing MR has more amphibiously trained GAs and is geographically closer to Taiwan, Nanjing MR would naturally be chosen as the joint command for a Taiwan operation. This suggests that Guangzhou units participating in a Taiwan operation would be transferred in command and subordinated to the Nanjing MR commander, who would be responsible for the war zone. The war zone would cover the entire area relevant to the crisis and be under the command of the commander of the Nanjing MR.

15th Airborne Corps

The 15th Airborne Corps is a strategic response force organizationally under PLAAF. Even though the 15th Airborne is a PLAAF unit, deployment and commitment of the 15th Airborne Corps is controlled by the CMC. The 15th Airborne Corps has three airborne infantry divisions totaling around 35,000 troops, with two divisions located in the Guangzhou MR and one division in the Jinan MR. Each division consists of three airborne infantry regiments and a light artillery regiment. They are supported by air defense, reconnaissance, engineer, chemical defense, communications and logistics units. The 43rd Airborne Division also has a subordinate Special Operations Group. To lift the airborne forces the PLAAF has dedicated an air transport regiment to each division, each with 25-30 transport aircraft. The airborne forces have gone through a significant development in recent years. They are able to air drop armored IFV, rocket launchers, light artillery, high speed assault vehicles, and a mobile C2 staff. This has improved the combat strength of the airborne forces from exclusively a dismounted infantry force to a semi-mechanized infantry fighting force. A company or maybe up to a battalion of the 15th Airborne Corps is equipped with ZLC2000 Airborne IFV with amphibious

306) Ibid.
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capabilities, armed with a 30mm turret mounted cannon and an anti-tank grenade launcher.\textsuperscript{309} The ZLC2000 has a crew of three and can carry 5 infantry soldiers. The IL-76MD can drop three ZLC2000 with their crews and infantry. Around 2015, the PLA is likely to have a task-organized airmobile capability,\textsuperscript{310} also trained for mountain, snow and jungle conditions.\textsuperscript{311}

However, the PLA has a limited air transport capability. When dropping airborne troops over smaller distances within China, the 15\textsuperscript{th} airborne is theoretically able to drop about 11,000 troops, equivalent to one airborne division, but that is using all large and small transport aircraft and helicopters in the PLAAF.\textsuperscript{312} For large scale strategic airdrops, the 15\textsuperscript{th} Airborne Corps relies on 14 PLAAF IL-76MD transport aircraft, which can either drop 190 troops or three armored vehicles over a distance of 6,100 km. This equates to a maximum first wave capability of 1900 troops and twelve armored vehicles in a long distance strategic insertion. This is a severe limitation, and therefore the PLAAF in 2005 ordered a further 34 IL-76MD in Russia, which will bring the total up to 48 aircraft. However, due to contractual problems, the delivery of these aircraft has been delayed.\textsuperscript{313} When and if delivered, the PLA will have a heavy transport fleet of 48 aircraft with a maximum first wave strategic airdrop capability of 7000 troops and 36 armored IFV, roughly equivalent to two regiments. China is negotiating with the Ukrainian Antonov transport aircraft company for the joint design and production of a large transport aircraft, which indicates that China desires to expand its strategic airdrop capability further in the future.

\textbf{Strategic Indicators in the MRs}

The strategic situation varies across the MR, and therefore the ground forces in the various MR are very different. GA along the Chinese land borders are mostly in a defensive disposition, either because of their composition or because of the distance to the border. But every MR has forces that are more powerful, with heavy armor and some of them are designated as a strategic reserve. The table below shows GA or units that are the most powerful or mobile units. Changes to their readiness or deployments can be used as strategic indicators in case of a crisis.

\textsuperscript{310} Cortez A. Cooper III, “Preserving the State; Modernizing and Task Organizing a Hybrid Ground Force”, in Roy Kamphausen and Andrew Scobell, “Rightsizing the People’s Liberation Army; Exploring the contours of China’s Military”, Strategic Studies Institute, September 2007, p. 272.
\textsuperscript{313} See chapter 7 on the PLAAF.
Table 2. Group Armies and units of strategic interest

<table>
<thead>
<tr>
<th>Military Region</th>
<th>Unit</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chengdu MR</td>
<td>149th Light Mech Infantry Div, 13th GA</td>
<td>Light and highly mobile, not heavy</td>
</tr>
<tr>
<td>Lanzhou MR</td>
<td>61st Mot Inf Div, 21st GA</td>
<td>Light mobile, not heavy</td>
</tr>
<tr>
<td>Beijing MR</td>
<td>38th GA</td>
<td>Very heavy, strategic reserve</td>
</tr>
<tr>
<td>Shenyang MR</td>
<td>39th GA</td>
<td>Very heavy, North Korea option</td>
</tr>
<tr>
<td>Jinan MR</td>
<td>20th GA</td>
<td>Mobile Strategic Reserve</td>
</tr>
<tr>
<td></td>
<td>26th GA</td>
<td>Mobile Strategic Reserve</td>
</tr>
<tr>
<td></td>
<td>54th GA</td>
<td>Amphibious, mobile strategic reserve. Can be used for amphibious operation in case of war in Korea or Taiwan.</td>
</tr>
<tr>
<td>Nanjing MR</td>
<td>1st GA</td>
<td>Amphibious, Complex terrain, Taiwan</td>
</tr>
<tr>
<td></td>
<td>12th GA</td>
<td>Amphibious, Complex terrain, Taiwan</td>
</tr>
<tr>
<td></td>
<td>31st GA</td>
<td>Amphibious, Complex terrain, Taiwan</td>
</tr>
<tr>
<td>Guangzhou MR</td>
<td>41st GA</td>
<td>Amphibious, Complex terrain, Taiwan</td>
</tr>
<tr>
<td></td>
<td>42nd GA</td>
<td>Amphibious, Complex terrain, Taiwan</td>
</tr>
<tr>
<td></td>
<td>15th Airborne Corps</td>
<td>Strategic Reserve</td>
</tr>
</tbody>
</table>

Status on the Organizational Change

It is not clear whether all divisions of the ground forces are going to be turned into brigades. A division is a more powerful unit with more equipment and more soldiers. A Soviet style division, which is what the PLA ground forces used to have, were a less agile and less responsive unit, since there were more C2 layers. But the PLA divisions have recently been experimenting with creating temporary battle groups within the divisions, which is a way of improving responsiveness and agility.314

Statistically, the numbers of divisions, regiments and brigades are as follows:

<table>
<thead>
<tr>
<th></th>
<th>Old organization</th>
<th>New organization</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Division</td>
<td>Regiment</td>
</tr>
<tr>
<td>Armor</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Mechanized Infantry</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Motorized Infantry</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Infantry</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Artillery</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Air Defense(^{315}) AAA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Army Aviation</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>38</td>
<td>25</td>
</tr>
</tbody>
</table>

*Table 3. Number of division, regiments and brigades*

The organizational distribution between old and new organizational structures, symbolized by division/regiments versus brigades, suggests that the PLA ground force is well underway in its organizational change. More than half of the units are brigades, and in some cases where units are of divisional size, it is justified by their mission. I.e. the 38\(^{th}\) GA mostly has divisions, but it is a strategic reserve, required to strike forcefully. There are many infantry and motorized units, which are more suitable for defensive operations, and in major cities or in the Xinjiang and Tibet MD, where domestic population control and mountain operations require large concentrations of infantry. The artillery and air defense units were mainly transformed into brigades as a part of the 1985 downsizing of the ground forces.\(^{316}\) The transformation of these units are from AAA units to Air Defense units, when they receive modern air defense systems. 7 out of 22 units still use the old AAA equipment.

**PLA Ground Force Equipment**

Even though the PLA in general has embarked on a modernization process, most of the PLA ground forces is using 2\(^{nd}\) or 3\(^{rd}\) generation domestically manufactured equipment, which is based on original Soviet design. The modernization process of the ground forces lack sufficient funds to support a ground force-wide modernization, which is why the restructuring and modernization is directed towards a group of dedicated units.

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\(^{315}\) Air defense units are all brigades. The modernization is not from division/regiment to brigade, but from AAA to Air Defense, which signifies the allocation of a more modern air defense system to the unit.

The following table lists ground force equipment by age. In some cases, the equipment acquired from 1980-2000 has been upgraded to more modern standards. Generally, the modern equipment produced after 2000 is more capable than older generations of equipment and has been informationized.\textsuperscript{317}

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Battle Tanks</td>
<td>5,000+</td>
<td>2,500</td>
<td>160</td>
<td>7,660</td>
</tr>
<tr>
<td>Light Tanks</td>
<td>1,000</td>
<td></td>
<td></td>
<td>1,000</td>
</tr>
<tr>
<td>IFVs</td>
<td>2,500</td>
<td>2,000</td>
<td>200-400</td>
<td>4,700</td>
</tr>
<tr>
<td>Armored Personnel Carriers</td>
<td>2,000</td>
<td></td>
<td>200-400</td>
<td></td>
</tr>
<tr>
<td>Artillery Self Propelled</td>
<td>200</td>
<td>1,000</td>
<td>170-230</td>
<td>1,370-1,430</td>
</tr>
<tr>
<td>Artillery, Towed</td>
<td>14,000</td>
<td></td>
<td></td>
<td>14,000</td>
</tr>
<tr>
<td>Rockets/ Multiple Rocket Launchers</td>
<td>2,400+</td>
<td>20-30</td>
<td></td>
<td>2,420</td>
</tr>
</tbody>
</table>

Table 4. PLA Ground Force equipment\textsuperscript{318}

The table above clearly shows that post 2000 equipment is limited compared to pre-2000 equipment, and that a lot of units have old and unsophisticated tanks, IFV and armored personnel carriers that were built before 1980. For the PLA to upgrade their units with modern equipment they will have to invest enormous amounts of money, and it will take years. It is possible though, to speed up the informationization process by developing add-on C4I modules for the pre-2000 equipment and thereby include them in the C2 network.

In the following description, the name of the equipment involves a type and a number, where the number refers to the year it was introduced. I.e. a Type 59 tank was introduced in 1959. Modifications may be identified by the addition of A, B, C or I, II or III.\textsuperscript{319}

\textsuperscript{317} Information deducted from an analysis of the PLA Army equipment on Sinodefence.com, (http://www.sinodefence.com/army/default.asp).
Main Battle Tanks
The majority of the PLA main battle tanks (MBT) are first and second generation introduced before 1990. The Type-59 MBT, which constitute 65% of the ground force’s tanks, are old tanks, but they have undergone a number of modifications, where they have been updated with new fire-control systems, a fire detection and suppression system, explosive reactive armor and a gun-launched 105mm laser guided missile.

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type-59-II/Type-59-I</td>
<td>5,000+</td>
</tr>
<tr>
<td>Type-79</td>
<td>300</td>
</tr>
<tr>
<td>Type-88A/Type-88B</td>
<td>1,000</td>
</tr>
<tr>
<td>Type-96</td>
<td>1,200</td>
</tr>
<tr>
<td>Type-98A/Type-99</td>
<td>160 (estimate)</td>
</tr>
<tr>
<td></td>
<td>7,660</td>
</tr>
</tbody>
</table>

*Table 5. PLA Ground Force main battle tanks*

The newest MBT Type 98A or Type-99 has a number of modifications, which makes it a significant improvement over previous MBT, but also a very expensive MBT. It is equipped with a 125mm smooth-bore gun, which is capable of firing laser-guided anti-tank rounds and an autoloader. It features a new image stabilized fire control system combined with a real-time positioning system and a laser identification system. It is fitted with a new 1,500 hp engine, a laser guided missile, laser beaming of enemy optics, and explosive reactive armor, which provides protection against enemy fire with High Explosive Anti-Tank (HEAT) warheads. This is a very capable tank; however, the price of the tank is likely to limit the number of Type-99 tanks the PLA ground force will acquire.

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Light Tanks

The ground force has a number of smaller tanks designed for the mountain regions and sandy soils of southern China. They are armed with smaller guns than MBT and have thinner armor. Type-62-I has a 85 mm main gun and is fitted with a laser range finder.\textsuperscript{324}

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type-62-I</td>
<td>400</td>
</tr>
<tr>
<td>Type-63A light amphibious tank</td>
<td>600</td>
</tr>
<tr>
<td></td>
<td>1,000</td>
</tr>
</tbody>
</table>

\textit{Table 6. The PLA Ground Force light tanks}\textsuperscript{325}

The Type-63A light amphibious tank has a 105 mm gun which is capable of firing laser guided anti-tank rounds. It can be launched from an amphibious warfare ship 5~7 km from the coast and travel to shore at high speed. It has a computerized fire-control system which enables it to fire accurately both on land and at sea.\textsuperscript{326}

Infantry Fighting Vehicles and Armored Personnel Carriers

In modern armored warfare, tanks and infantry work as a team. Tanks provide firepower and protection against armor and long range threats, whereas the infantry provide short range protection for the tanks against enemy infantry with anti-tank weapons. Maneuverability is important in combat, and to a large extent the level of maneuverability depends on how the infantry is transported. If the infantry is transported in an Armored Personnel Carrier (APC) then they will have to dismount to fight, as they cannot fire from the APC. This slows down the forward moving pace, and thus the tanks are less able to exploit their cross country maneuverability. If the infantry on the other hand is transported in an IFV, from which they can fight, then they are better protected and can move quicker, thus making the combined unit of tanks and IFVs much more effective. From the 1960’s to the 1980’s, the ground force invested in APCs, where the older Type-63 is the most common.

\textsuperscript{326} Sinodefence.com, \textit{“Type 63 Amphibious Tank”}, 20 February 2009, (http://www.sinodefence.com/army/tank/type63.asp).
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<table>
<thead>
<tr>
<th>Equipment</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Track APC</strong></td>
<td></td>
</tr>
<tr>
<td>Type-63-II/Type-63-I/Type-63A/Type 63C</td>
<td>2,600</td>
</tr>
<tr>
<td>Type-89-I</td>
<td>300</td>
</tr>
<tr>
<td><strong>Wheel APC</strong></td>
<td></td>
</tr>
<tr>
<td>Type-77-II</td>
<td>200</td>
</tr>
<tr>
<td>Type-92</td>
<td>600+</td>
</tr>
<tr>
<td>WZ-523</td>
<td>100</td>
</tr>
</tbody>
</table>

3,500+

Table 7. The PLA Ground Force Armored Personnel Carriers

In the 1980’s, the ground force invested in the more useful IFV, from which the infantry can fight mounted. Most of the IFVs are of the Type 86A, which is the Chinese equivalent to the Soviet BMP-1. It has a 73 mm gun and an anti-tank guided missile.

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type-86A</td>
<td>1,000</td>
</tr>
<tr>
<td>Type-97</td>
<td>200-400</td>
</tr>
</tbody>
</table>

1,200

Table 8. The PLA Ground Force Infantry Fighting Vehicles

The most recent is the Type-97 IFV, which is a combination of an indigenously produced chassis and a complete Russian BMP-3 turret. With a crew of 3 it can carry 5-7 soldiers, who are able to shoot mounted from three firing ports (left, right and rear exit door) in the chassis. It has a 100 mm gun with an effective range of 4 km. It also has a 30 mm gun and a anti-tank missile capable of penetrating 600 mm of armor behind explosive reactive armor, and is a serious threat to most modern tanks.

329) Estimate.
330) Estimate, number of Type-97 IFV uncertain.
It has amphibious capabilities and is able to do long distance swimming. The amphibious mechanized divisions in the Nanjing and Guangzhou MR are equipped with Type 97 IFV.\textsuperscript{334} A special IFV is the ZLC2000 Airborne IFV, which is used by the 15\textsuperscript{th} Airborne Corps.\textsuperscript{335} It can be airdropped from an IL-76MD, and is an important step in the mechanization of the 15\textsuperscript{th} Airborne Corps. There is no information about how many ZLC2000 the PLA have.

**Artillery**

The PLA ground force is in possession of some 15,200+ artillery pieces, of which 14,000 are towed and 1,200 are self-propelled (SP).\textsuperscript{336} Generally, towed artillery is much less mobile than SP artillery, and modern armies seek to equip their artillery units with SP artillery that can follow the tanks and IFV across the terrain. This means that the vast majority of the ground force’s artillery is of an older generation, and with an even distribution each of the seven MRs is approximately equipped with 170 SP artillery pieces, which is not a lot in a 1.6 million men ground force. The U.S. Army, with approximately half the amount of army soldiers\textsuperscript{337} compared to the PLA, has 2,087 SP artillery pieces,\textsuperscript{338} or almost double of what the PLA ground force has. The PLA ground force have developed some advanced grenades for its artillery, including cargo projectiles with sub-munitions and laser guided artillery projectiles.\textsuperscript{339}

**Multiple Rocket Launcher**

The PLA ground force has 2,400+ Multiple Rocket Launchers\textsuperscript{340} (MRL), and most of them have a range between 10 to 40 km. However, the last two types of MRL developed by China have significantly longer ranges, reaching between 80 to 180 km.

\textsuperscript{334) Ibid.}
\textsuperscript{339) Christopher F. Foss, “China unveils new self-propelled howitzer system”, International Defence Review, 28 November 2008.}
Table 9. The PLA Ground Force Multiple Rocket Launchers\textsuperscript{341}

<table>
<thead>
<tr>
<th>Type</th>
<th>Size</th>
<th>Carrier</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type-89</td>
<td>122 mm – 40 tubes</td>
<td>Self propelled - tracked</td>
<td>20-30 km</td>
</tr>
<tr>
<td>Type-70</td>
<td>130 mm – 19 tubes</td>
<td>Self propelled</td>
<td>10-15 km (estimate)</td>
</tr>
<tr>
<td>Type-81</td>
<td>122 mm – 40 tubes</td>
<td>Truck</td>
<td>20-30 km</td>
</tr>
<tr>
<td>Type-82</td>
<td>130 mm – 30 tubes</td>
<td>Truck</td>
<td>10-15 km (estimate)</td>
</tr>
<tr>
<td>Type-83</td>
<td>273 mm – 4 tubes</td>
<td>Self propelled - Tracked</td>
<td>40 km</td>
</tr>
<tr>
<td>Type-96 (WS-1B)</td>
<td>320 mm – 4 tubes</td>
<td>6 x 6 truck</td>
<td>80-180 km</td>
</tr>
<tr>
<td>Type-03 (PHL03)</td>
<td>300 mm – 12 tubes</td>
<td>8 x 8 truck</td>
<td>150 km</td>
</tr>
</tbody>
</table>

Not much is known about the latest Type-03 MRL. However, it is expected that it has a warhead with High-Explosive Fragmentation and anti-armor/personnel sub-munitions.\textsuperscript{342} China has the technology to use satellite navigation in the rockets,\textsuperscript{343} but it is not known whether Type-03 MRL has this capability.

**Air-Defense Weapons**

The ground force has its own air defense weapons for self defense of its units. Most of them are fairly short ranged missiles, man portable air defense systems (manpads) and guns. Most of them are considered relatively ineffective against modern jet fighters and bombers. However, as it was demonstrated during the 2003 Iraq war, they can be very lethal against helicopters that fly low and slow.\textsuperscript{344} PLAAF is responsible for providing area air defense, and is accordingly equipped with medium and long range surface-to-air missiles systems.

\textsuperscript{343} Satellite navigation technology is installed in the B611 Zhenmu short range tactical missile system, which was on display at the 2004 Zhuhai International Aviation and Aerospace Exhibition. Source Dennis J. Blasko, “The Chinese Army Today; Tradition and Transformation for the 21st Century”, Routledge, 2006, p. 133.
\textsuperscript{344} The Guardian, “Insurgents may have new anti-aircraft weapon”, 5 February 2007, (http://www.guardian.co.uk/world/2007/feb/05/iraq.topstories3).
Helicopters

The PLA ground force operates around 500 helicopters,\textsuperscript{345} which is not a lot considering the size of both the ground force and the country. In comparison, the United States Army operates more than 4,000 helicopters.\textsuperscript{346} Most of the helicopters are of older design and are lacking in both numbers, quality and capability compared to modern helicopters in the West, as it was experienced during the Wenchuan earthquake, where helicopters experienced severe problems flying in challenging weather conditions at high altitude in the mountains.\textsuperscript{347} The ground force is striving to develop its helicopter force into a modern capability equipped with early warning, target detection, digitalized C2, communication and navigation and electronic counter measures.\textsuperscript{348} Future roles and missions for helicopters are air attack, air assault operations, airborne C2, reconnaissance, air mobile operations, air transport, search and rescue, medical evacuation and assistance to the civilian society in heavy winter conditions, or for rescue and relief operations.\textsuperscript{349}

Doctrinally, the Army aviation regiments are being integrated into the combined arms warfare, and experiments are being carried out on how best to utilize this versatile platform. Most units are designated regiments, except for the 3\textsuperscript{rd} Helicopter Brigade of the Xinjiang MD,\textsuperscript{350} which suggests that the helicopter units will be transformed into brigades as well. What this means organizationally is uncertain, but one can speculate that it entails that the unit will be organically allocated mixed types of helicopters to support all required roles in support of the GA. Operationally, the Army aviation units are seeking to improve their capabilities, as it was seen when the 9\textsuperscript{th} Helicopter Regiment of the Jinan MR practiced a long distance deployment over 1,000 miles to an unfamiliar site, where the unit operated from a temporary airfield practicing live firing.\textsuperscript{351}

China is currently operating and developing the following helicopters:

<table>
<thead>
<tr>
<th>Role</th>
<th>Type</th>
<th>Number of A/C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attack helicopters</td>
<td>Z-10</td>
<td>Under development</td>
</tr>
<tr>
<td></td>
<td>Z-9</td>
<td>48</td>
</tr>
<tr>
<td>Scout Attack helicopter</td>
<td>Z-11</td>
<td>37 [352]</td>
</tr>
<tr>
<td>Assault helicopter</td>
<td>SA-342 Gazelle</td>
<td>8</td>
</tr>
<tr>
<td>Support helicopters</td>
<td>AS-350 Ecureuil</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td>Mi-171</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Mi-171 V5</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Mi-6 Hook</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>S-70C Black Hawk (serviceability in doubt)</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>Mi-17 Hip</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Mi-8T Hip (serviceability in doubt)</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>M-26 Halo</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>AC-313 (13 tons transport helicopter)</td>
<td>Under development [353]</td>
</tr>
<tr>
<td>Utility helicopters</td>
<td>Z-9 / 9B (AS-365 Dauphin 2)</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>AS-316 Alouette III</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Z-15</td>
<td>Under development</td>
</tr>
<tr>
<td>Search and Rescue</td>
<td>SA-321 Super Frelon</td>
<td>7</td>
</tr>
</tbody>
</table>

*Table 10. Helicopters Operated by the PLA Ground Force* [354]

To achieve its long term ambition of a modern helicopter force, China is currently developing attack helicopters, and together with European helicopter manufacturers they are developing medium sized transport helicopters. China is independently developing the 13 ton AC313 transport helicopter [355], but is also in a joint venture with Eurocopter, the Chinese are developing the EC-175 (Z-15) [356] and

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353) AC313 is a 13 ton civilian transport helicopter, which obviously also has military utility. It is independently developed and researched in China and is expected to make its first flight by the end of 2009. It is built to meet international standards and is expected to be granted its airframe certificate by 2010. Source: AvBuyer.com.cn, “Heaviest helicopter to make debut flight at the end of 2009”, 15 July 2009, (http://www.avbuyer.com.cn/e/2009/36687.html).
with Augusta Westland they are developing the A109E medium transport helicopter.\(^{357}\) When it comes to heavy helicopters, the Chinese AVICopter has signed a deal with the Russian arms maker Oboronprom to jointly develop and manufacture a 30 tons helicopter based on the design of the Mi-46.\(^{358}\)

**Unmanned Aerial Vehicles**

Chapter 7 on the PLAAF contains a description on the general development of UAVs in the PLA. The PLA ground force has used UAVs for reconnaissance and artillery spotting for several years. It has become an integrated part of operations, and there are extensive efforts to include the information obtained from UAVs into the newly developed C4ISR system. The PLA has not yet developed UAVs that can carry bombs or rockets, but it is likely to be on the to-do list, once they have developed a UAV that can carry a sufficient payload.

**C2 and Informationization**

From various news messages released by the PLA, it is possible to draw a picture of the ambitious informationization project that the ground force has embarked upon. The network development is far from finished, and not all units have been allocated the equipment yet. However, experiments have been carried out, and we can begin to identify the future capabilities of the system. The ambition is the development of a C4ISR system that will not only include all ground force units in the network, but also link up with its sister services in a joint network. Ground force C2 headquarters of divisions, brigades and battalions are networked, and at battalion and company level they are equipped with mobile C2 armored vehicles. The ambition is that information will be collected from a large variety of sources from all services, fused, analyzed and disseminated in near real-time to subordinate units all the way down to the individual tank, IFV and artillery unit. The PLA is still far from having achieved this goal, but with another 10-15 years of testing, development and implementation, the PLA will have achieved a lot in terms of digitalization of the ground force. New equipment that the PLA acquires is likely to be born with these capabilities, but older equipment, of which the ground force has a lot, can be modified with C4ISR plug-in modules providing navigation, intelligence, situational awareness and C2. This will, more than anything, be crucial in turning the PLA into an effective modern fighting force.

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Ground Force Logistics

In the past, the ground forces planned for defensive operations in China, and relied on the provincial forces to provide logistical support to the field units. However, with the implementation of a new doctrine and mobile long distance deployable forces, the PLA has realized that this is not a reliable source for logistics. The ground force is therefore modernizing its logistical chain, reorganizing it into a modern joint organization. The ground force is developing a modern logistical transport capability with computerized logistical management. The ground force is improving its messing facilities and the provision of nutritional food, medical care, field water purification, new uniforms and protective equipment. All required to support mobile operations over long distances, which is in line with the changes in ground force doctrine.

PLA Ground Force Doctrine and Training

Doctrinally, the ground force is going through significant changes, and its combat effectiveness will improve over time. The main change is the implementation of brigade-battalion structures and the use of modules to create self sustained battle groups. On the tactical and operational levels, the main emphasis is on surprise and offensive operations. These changes have lowered the combined arms level from division to battalion level, which means that lower level commanders will be empowered in a hitherto unseen fashion. The delegation of command authority, achieved through this change, will make the units more responsive and able to react to a fluent battlefield. Traditionally, the ground force has been a very centralized institution, where command authority rested at a very high level, so a change of this nature, contravening tradition, is likely to take years to be fully implemented. It is not enough to change the equipment and doctrine. The real change must be in the minds of the leading officers, and this will take some time. But it is likely to happen, because the ground force has adopted more realistic training and exercises.

The Ground Force and Joint Doctrine

The ground force is integrating and networking new and existing ground, air and satellite based communications equipment, and the ground force participates in joint exercises with both the PLAAF

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and the PLAN. GAs are trained in joint amphibious operations and naval support, and air power is included in ground force exercises. Intelligence information from all sources is being fused into a common operational picture and then shared. Even though ground and air forces participate in the same exercises, there has not yet been evidence of integration at the levels seen in the west with readily available, dynamic and seamless air support. Joint operations in the same geographical area seem to be more sequenced than integrated joint in nature. This is likely to change in the future, as the ground force is experimenting with new tactical doctrine: i.e. it is experimenting with integrating organic Army aviation helicopters into a combined arms doctrine, and is developing close air support (CAS) procedures from helicopters to ground forces. The ground force is also experimenting with placing PLAAF Air Liaison Officers (ALO) in divisional and regimental command posts during live fire exercises.

No information has been provided on the use of Forward Air Controllers (FAC) guiding fighter bombers in support of ground operations, but the positioning of an ALO in the ground force command posts implies that procedural separation of naval, air and ground fires has been developed. The PLA has not yet developed the very difficult technique of providing fighter CAS to troops on the ground in contact, but with the PLAAF developing precision guided munitions, close air support may become a easier in the future, considering that it, from a pilots point of view, is less complicated to deliver precision guided munitions from medium altitude, than delivering un-guided munitions at low level in a high treat environment. The PLA will still have to resolve the issue of avoiding fratricide, which is a serious concern, even with precision guided munitions.

Ground Force Training and Exercises

The PLA issued a new guideline for military training and evaluation, effective January 1st 2009. The guideline promotes joint informationalized and standardized training across the PLA with increased realism and complexity in the training. The ground force has gone from pre-scripted exercises to unscripted dynamic Red vs. Blue exercises, and is developing its doctrine through a structured development process. The use of unscripted dynamic Red vs. Blue scenarios will over time promote the best operational officers, which will contribute to the enhancement of the ground force combat effectiveness.

Units regularly take part in exercises, and every year the ground force carries out several trans-
regional long distance deployment exercises.\textsuperscript{364} In 2009, the PLA conducted exercise “Kuayue-2009” (Stride-09), where four divisions, 50,000 troops, from four different MRs (Shenyang, Lanzhou, Jinan and Guangzhou)\textsuperscript{365} participated together with personnel and aircraft from both the Army Aviation and PLAAF.\textsuperscript{366} The exercise aimed at improving the overall combat effectiveness in the context of information warfare, joint operations and the joint C2 of air-land operations. This was the first time that forces from four different MRs deployed across the country to participate in the same exercise. It is likely that this exercise has targeted a problem that the PLA has inevitably encountered: the ground force has been experimenting with battle group modularity in all regions using new technology, and it is inevitable that different ideas have arisen, which the PLA needs to capture and turn into doctrine to maintain procedural, doctrinal and technological interoperability between the GA. The exercise included long distance deployments and has been a logistical challenge. The exercise did not have a Taiwan focus considering that Nanjing MR was not involved, nor did the exercise include amphibious operations.

\textbf{Summary on the Ground Forces}

The PLA ground force is a very big organization, and its modernization started in 1979 and will extend until to the middle of the 21\textsuperscript{st} century. The modernization still has long to go, and the ground forces are far from having achieved their objective of being able to win a local war under informationized conditions.\textsuperscript{367} This does not mean that the ground forces are incapable of conducting operations. On the contrary, but the operations they can conduct are not as sophisticated as the kind of operations westerns military forces can conduct. Some key units are stronger than others and they are among the first to acquire new equipment. They are contributing to the development of new doctrine and procedures, and training to utilize the concept of a modularized organizational structure within the division or brigade, enabling the unit to design battle groups based on what is required for a particular operation. However, the modernization is not limited to these key units. My research has shown that other units across the ground forces are also being modernized. Some units are being trained in long distance deployments, and are supported by a modernized logistic system, augmented by a

civilian system, enabling them to sustain operations along the periphery of China’s borders. They are becoming informationalized and integrated into a satellite supported joint C4ISR system with connectivity all the way down to the lowest units. It is questionable whether the whole ground force will be reorganized into highly mobile maneuver forces. The requirement to support the PAP in maintaining domestic law and order entails that the ground forces needs a lot of unsophisticated infantry units with limited mobility, as there is no requirement for them to deploy. These units are likely to remain a sizeable part of the ground force. There will be a limited need to invest in expensive equipment for these units, but they will still be a financial burden on the ground force budget because of the many soldiers and the increasing salaries in the PLA.
Modernization of the PLA Air Force

From its inception in 1949 until 1990, the PLA Air Force (PLAAF) was primarily a territorial air superiority force, established for the purpose of protecting key assets on the ground and supporting the ground force. The PLA was a land centric military under the leadership of ground force officers, and naturally the PLAAF’s initial raison d’être was to support the ground force. The PLAAF was to achieve air superiority and provide combat support to forces on the ground. The PLAAF got its first combat experience right after its establishment during the 1950-1953 war in Korea, where the inexperienced Chinese pilots were up against American World War II veterans. The Chinese pilots got support from Soviet pilots, who taught the Chinese pilots how to fight air to air combat. The Chinese pilots achieved quick results through hands-on combat experience, and managed to establish an air force capable of achieving local air superiority over their own bases north of the Chinese-Korean border. They flew Mig-15, which had a combat range of only 100 miles, which prevented them from operating south of the Yalu River, or from providing support to the Chinese ground forces in Korea. This inability to attack ground targets would remain an issue for the PLAAF in the following decades. Throughout the 1970’s and 1980’s, the PLA failed to train for joint warfare. The PLAAF trained and organized almost exclusively for air defense, and had no offensive fighter aircraft, no doctrine, no organization for offensive operations, and did not train offensive air support to ground force operations; such as Close Air Support (CAS) or battlefield air interdiction.

The Chinese definition of air superiority or “Command of the Air” was created in the 1960’s and it is different from western definitions. The U.S. joint doctrine defines the various degrees of command of the air as:

- air superiority: That degree of dominance in the air battle of one force over another that permits the conduct of operations by the former and its related land, sea and air forces at a given time and place without prohibitive interference by the opposing force.”

Air dominance: That degree of air superiority wherein the opposing air force is incapable of effective interference.

In 1962 the PLA published the first PLAAF Combat Regulations (Zhongguo Renmin Jiefangjun Kongjun Zhandou Tiaoling 中国人民解放军空军战斗条令) that laid out the concepts for the mission of command of the air (zhikongquan 制空权), which is divided into two types: (1) strategic command of the air (zhanlue zhikongquan 战略制空权), and (2) campaign and tactical command of the air (zhanyi zhanshu zhikongquan 战役战术制空权). The PLAAF defines strategic command of the air as “the ability to influence a war by conducting command of the air for the entirety of the war or for a specific period of time at a particular location or for locations over a sustained period of time.” It defines campaign and tactical command of the air as “the ability to influence a battle by conducting command of the air over a critical or limited area for a short period of time.”

The Chinese and the western concepts of command of the air are significantly different. The western definition which focuses on “preventing prohibitive interference” is a relative assertive definition, which relates the level of command of the air with the enemy’s ability to interfere in its operations and its ability to achieve its objective. Such a definition focuses on taking control of the air. The Chinese definition on the other hand focuses on “the ability to influence the war”, which is a less ambitious definition and difficult to measure as it is only aspiring to influencing the war, rather than taking control of the air situation. This definition from 1962 reflects the poor state of the PLAAF at the time, with limited Surface to Air Missile coverage and limited combat aircraft range. As this chapter will show, the PLAAF has over the last decade been acquiring much more capable aircraft, and it would be logical if the PLAAF were to redefine their interpretation of “command of the air”, to match their much improved capabilities.

In 1990, the PLAAF issued an internal document about its development strategy for the future, which would reorient the PLAAF towards offensive operations. This document, combined with the PLAAF’s observations of the U.S. lead 1991 war in Iraq, would fundamentally change the PLAAF. From being a territorial air defense force, the PLAAF would change its focus to not only encompass the achievement of air superiority, but also the conduct of ground attack, air transport of troops and

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371) Hua Renjie, Cao Yifeng, and Chen Huixiu, editors “Kongjun xueshu sixiang shi (History of Air Force Theory), Beijing: Jiefangjun Publishers, 1991, p. 316. The term zhanyi (战役) can be translated as campaign or operational, depending on the context. Some PLA and PLAAF publications translate zhikongquan (制空权) as command of the air. The authors cite the military volume of the Chinese Encyclopedia [Zhongguo Baike Quanshu 中国百科全书], published in 1988 for the types of command of the air and their definitions. According to the Air Force Dictionary, command of the air can be divided into three types: strategic, campaign, and tactical, but no specific definitions were given. See Zhu Rongchang, ed., Air Force Dictionary [Kongjun Da Cidian 空军大词典], Shanghai: Shanghai Dictionary Publishing House, September 1996, 13-14.

supplies, airborne early warning and reconnaissance, ECM and maintenance and logistics.\textsuperscript{373} Priorities were put on In Flight Refueling (IFR) capable and night-capable offensive fighter aircraft that would enable attacks deep into enemy territory. A number of strategic bombers would be required, and emphasis would be put on reconnaissance aircraft, jamming aircraft and airborne early warning and control. The PLAAF was also to acquire strategic transport and air refueling aircraft, as well as armed helicopters for the ground force and Navy, and would develop ground-based air defense missiles, radar and communications systems. In total, a comprehensive all encompassing modernization plan that would turn the PLAAF into a fighting force capable of winning a small scale regional air campaign.

In 1990, the PLAAF possessed around 5000 second generation aircraft that needed replacement and enormous investments would have to be made in order to turn the PLAAF into a modern fighting force. The Chinese industrial base could not support an immediate modernization, so China was forced to acquire Russian built aircraft and ground based air defense systems to achieve an initial modern capability. In parallel with buying Russian equipment, China invested heavily in establishing an indigenous aviation industry that for many years has relied on the use of foreign parts and know how, but which in the future can be expected to produce more and more of her aircraft technology indigenously. A distinct Chinese characteristic is long term planning, and China has set itself on a course of establishing a modern aviation industry abreast with the rest of the world, and is investing heavily towards achieving this goal.

**PLAAF Combat Aircraft Inventory**

The data on how many operational aircraft China has is very ambiguous, and there are no official Chinese data. By comparing various sources, it is assessed that China has approximately 1600 combat aircraft, including defensive, offensive and multi-role fighters, as well as long range bombers. Of those, about 1310 are older, second generation aircraft, and about 290 are of a modern standard in the sense that they are acquired after the late 1990’s. Old aircraft are fatigued, difficult to maintain, and spare parts may be difficult to obtain. Hence it is reasonable to assume that the number of aircraft the PLAAF will have available in a crisis is somewhat lower than this.

The table below categorizes the aircraft in accordance with generations. The international community bases the generation on particular decades as follows: \textbf{1}\textsuperscript{st} generation 1945-1955, \textbf{2}\textsuperscript{nd} generation 1955-1960, \textbf{3}\textsuperscript{rd} generation 1960-1970, \textbf{4}\textsuperscript{th} generation 1970-1990 and \textbf{5}\textsuperscript{th} generation

1990 – present. The PLA system for outlining the generations of combat aircraft does not match the international system. The PLAAF and PLANAF identify their aircraft only as 1st, 2nd and 3rd generation based on when they were first integrated into the air force. The table below follows the Chinese terminology.

<table>
<thead>
<tr>
<th>Designation</th>
<th>Role</th>
<th>Quantity</th>
<th>Manufacturer, Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>J-XX</td>
<td>Multi-role Stealth</td>
<td>-</td>
<td>Chengdu/Shenyang, China</td>
</tr>
<tr>
<td>J-11B</td>
<td>Multi-role</td>
<td>18+</td>
<td>Shenyang, China</td>
</tr>
<tr>
<td>J-11A (SU-27SK)</td>
<td>Air Defense</td>
<td>116</td>
<td>KnAAPO/IAPO, Russia</td>
</tr>
<tr>
<td>J-10</td>
<td>Multi-role</td>
<td>84+</td>
<td>Chengdu, China</td>
</tr>
<tr>
<td>Su-30MKK</td>
<td>Multi-role</td>
<td>73</td>
<td>KnAAPO, Russia</td>
</tr>
<tr>
<td>JH-7/JH-7A</td>
<td>Fighter-Bomber</td>
<td>72</td>
<td>Xi’an, China</td>
</tr>
<tr>
<td>J-8II</td>
<td>Air Defense</td>
<td>300+</td>
<td>Shenyang, China</td>
</tr>
<tr>
<td>J-8I</td>
<td>Air Defense</td>
<td>120</td>
<td>Shenyang, China</td>
</tr>
<tr>
<td>J-7</td>
<td>Air Defense</td>
<td>+500</td>
<td>Chengdu, China</td>
</tr>
<tr>
<td>Q-5</td>
<td>Ground attack</td>
<td>120</td>
<td>Nanchang, China</td>
</tr>
<tr>
<td>H-6</td>
<td>Long range bomber</td>
<td>82</td>
<td>Xian, China</td>
</tr>
</tbody>
</table>

Table 1: The PLAAF aircraft inventory

Combat Aircraft

The following paragraphs list the capabilities of the Chinese combat aircraft, but for the reader who has no insight into air combat terminology, the following will briefly explain some of the important aspects of air warfare.

Multi-role fighters. Some fighters are only able to do either air defense operations or offensive operations, but as fighters have become more and more advanced, new fighters are often able to perform both defensive and offensive operations (multi-role), which makes the aircraft much more

versatile and useful. This assumes that the pilots flying multi-role fighters are given more flying hours, as more training is required to be fully trained in both the offensive and defensive role.

Air defense operations. Modern air-to-air combat generally takes place in two areas. The first encounter between two opposing groups of aircraft mostly takes place beyond the range which the pilots can see, termed Beyond Visual Range (BVR). To do this effectively, the fighter requires advanced radars, identification systems and missiles with long ranges, termed Medium Range Air-to-Air Missile (MRAAM). Air combat of this nature is very dependent on how advanced the technology is, especially the range of the radars and missiles, and their ability to not get affected by electronic jamming.

Also, in recent years fighters are being equipped with data links, which provide the pilot with radar information from Airborne Early Warning (AEW) aircraft and radar stations. This gives the pilot an all important awareness of the air situation beyond what he can see with his naked eye. However, not all combat takes place BVR. Some fighters may survive the initial BVR battle and close in on each other to within visual range (WVR). Once the fighters are WVR, different weapons and skills are required.

The chance of survival for the pilot basically depends on four factors in close in air-to-air combat: (1) The maneuverability and engine power of the fighter he is flying (2) the level of modernization of his Short Range Air-to-Air Missiles (SRAAM), (3) the aircrafts self protection equipment and (4) the pilot’s performance in close in air-to-air combat, which depends on his natural skills and training level. In the past, SRAAM could only be fired on a target if it was more or less in front of the aircraft, but advanced guidance systems and extreme maneuverability of the missiles now makes it possible to launch missiles which are off the bore-sight of the aircraft. In this case, the missile is aimed with a helmet mounted sight, which follows the movements of the pilots head. By turning his head and looking at the target, he is able to steer the missile onto the target and fire even though it is not right in front of him. There are limits as to how far off the bore-sight of the plane the missile can be launched. However, it is an enormous advantage during air combat.

Offensive air operations. For many years, fighters and bombers used unguided bombs, which are not very precise, and also the aircraft is vulnerable during the delivery of the bombs. The technological development of the bombs now enables to pilots to deliver them at greater ranges, as they are able to glide over a distance. The bombs are also more precise, as they rely on navigational data from satellites navigation systems. This makes the offensive mission much more effective, and the offensive aircraft may be less vulnerable during the mission.

The PLAAF is in the process of replacing an ancient fleet of 2nd generation fighters with new and modern fighters. The number of fighters in the PLAAF is being dramatically reduced, as the PLAAF has changed from a philosophy of having many cheap low quality fighters to fewer more expensive, but much more effective, fighters. The PLAAF has recognized that a western style high technology air force is far superior to a Soviet style low tech-high quantity air force. At first, the PLAAF resorted to buying fighters in Russia to quickly achieve a fighting capability, but the long term strategy for China is to build its own fighters, and China has created an extensive aircraft industry, building civilian
Modernization of the PLA Air Forces

aircraft as well as modern combat fighters. The modern PLAAF fighters, such as the Russian Su-30-MKK and the indigenously built J-10 and J-11B, are all multi-role fighters, which shows the PLAAF emphasis on offensive operations as decided upon in 1990. They are all high performance fly-by-wire fighters, with a vast array of modern weapons. In spite of this, they are still not technologically equivalent to western fighters. The 2nd generation fighters would not stand many chances against a modern air force, but against a lesser capable enemy they are by no means worthless. The older aircraft are given an update that will enable them to participate in a modern combat scenario. They are equipped with new radars and MRAAMs, some of them can carry precision guided bombs, and some of the older aircraft are being equipped with data-link, providing a recognized air picture that will provide them an unprecedented situational awareness, which is priceless in modern air combat.

Air Defense
The PLAAF has more than a thousand air defense fighters due to its original focus on air defense and air superiority. All its modern fighters are multi-role, but the earlier acquisitions were exclusively for the air defense role. Of the aircraft that are only air defense capable, the Su-27 is the most advanced, but the older 2nd generation indigenously built J-7 and J-8 are the ones which the PLAAF has the most of.

SU-27SK. The first Su-27SK was acquired in 1992 from Russia, and it was the first PLAAF aircraft that matched western fighters. The Su-27SK is equipped with a high performance pulse Doppler radar that can track targets whilst it is scanning for new targets (track-while scan), and it can look down and shoot, “look-down/shoot-down”, which is normally difficult for a radar because of electronic clutter coming from radar returns from the ground. Its search range is 240 km, with a target engagement range in the forward hemisphere of 80-100 km. The radar can search, detect and track up to 10 aerial targets with automatic threat assessment and prioritization, which is a big help to the pilot. Additionally, it has an InfraRed Search and Track system that together with a Laser Range finder (IRST/LR) and helmet mounted target designator can search, track and engage targets between 40 and 100 km. It has a modern protective suite encompassing radar warning, active countermeasures such as chaff, flares and ECM jamming pods. In 2008, an update of the Su-27SK was initiated, including a new engine with improved fuel consumption and increased thrust and afterburner improving performance. The Su-27SK is armed with a 30mm cannon and R-73 (AA-11 Archer) Infrared (IR) Homing Short Range Air-to-Air Missile (SRAAM), which, coupled with the Helmet Mounted Sight,

poses a serious threat to any aircraft in close-in air combat. For Beyond-Visual-Range (BVR) combat, the Su-27SK is equipped with the Russian missile R-27 (AA-10 Alamo) Semi-Active Radar Homing MRAAM and the R-27AE Active Homing MRAAM.

J-7, of which the PLAAF has more than five hundred, is a Chinese copy of the Soviet Union MIG-21 fighter (NATO Codename Fishbed). It was first seen in service in 1976, and the first versions retired in the early 1990’s. Of the five hundred J-7 the PLAAF has, about two hundred are the most updated J-7E/G equipped with PL-8 SRAAM. The remaining older versions of the J-7 are equipped with PL-5. It has no BVR capability, and for that reason it is reasonable to say that the J-7 is next to useless in modern air combat, but can be used to saturate enemy air defenses paving the way for more capable platforms. The J-7 has a secondary ground attack role, using unguided rockets and bombs.

J-8I entered service in 1981, after having been delayed by the Cultural Revolution. It was supposed to be an improvement of the J-7, but failed on many accounts. Its main achievement was that it led to the successful J-8II, of which several hundreds have been produced. The J-8II became the first successful version of the fighter, and it has been upgraded several times.

**Multi-Role**

The acquisition of multi-role fighters with offensive capabilities signified the doctrinal reorientation towards offensive operations. The main multi-role aircraft in the PLAAF inventory are the Su-30 and the domestically built J-10 and J-11B. These are the fighters in which the PLAAF are investing to build a modern air force, even though they are not quite as advanced as western fighters. However, they are high performance fighters, capable of using standoff precision weapons, both air-to-air and air-to-ground.

In 1996, China bought 200 Su-27SKs supplied in kit-form, to be assembled in China as J-11. 95 aircraft were to be delivered already assembled, and 105 as sets of parts to be assembled in China. Not long after, it was revealed that China had an indigenous J-11B fighter program, which Russia claims is a copy of the Su-27SK. This dispute and the contractual difficulties in delivery of 38 IL-76 and IL-78 from another contract, caused trouble in the Sino-Russian armaments trade. The issue was of great significance, and caused a dramatic drop in the armaments trade in 2007 between China and Russia. The issue was re-addressed during the Sino-Russian Moscow summit held on 28 October 2008. However, Russia has not yet sold new fighters to China, and it is unknown whether the issue has been resolved, even though China and Russia agreed on a strategic cooperation for the

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future. What complicates the relationship further, is the rumor that Pakistan is negotiating with China about the purchase of J-11. Pakistan and China already enjoy close ties as China has sold the J-10 to Pakistan, to be delivered in 2014-15 under the name FC-20.

Su-30MKK/MK2. The PLAAF has the Su-30MKK which is a two-seat, two engine multi-role fighter capable of air defense operations as well as air interdiction and suppression of enemy air defenses. The PLAAF uses Russian weapons on the Su-30, such as R-73 (AA-11) SRAAM, R-27 (AA-10) Semi Active Homing MRAAM and R-77 (AA-12) Active Homing MRAAM. It has helmet mounted cuing of its SRAAM, which will be a serious challenge to many western aircraft in close-in air combat, and has two sets of controls that will allow both crew members to fly or guide the weapons. It has an electro-optical laser range finder that enables the crew to obtain visual identification and range information at long ranges. It has an extensive self protection suite encompassing radar warning, chaff/flare and jammers.

For offensive operations, the Su-30 has beyond visual range precision strike capabilities using Kh-29 and Kh-59 air-to-surface missiles, Kh-31P Anti-radiation missiles and TV-guided bombs. The aircraft also has an In Flight Refueling capability, making it capable of refueling from Russian built refueling systems, which China is in the process of acquiring.

The PLAN has 24 of the improved Su-30MK2, which has an improved fire-control radar enabling it to fire the Kh-17A Krypton-A long range supersonic anti-ship missile. In addition, it is capable of carrying the M400 reconnaissance suite, which allows the crew to control up to 10 other fighters on a data-link, thus giving the Su-30MK2 a limited AWACS capability.

J-11A/B. J-11A aircraft is an air defense fighter basically similar to Su-27, but assembled in China. Whereas the J-11A is only an air defense fighter, the J-11B aircraft is a significantly upgraded fighter that has been given advanced offensive capabilities. Compared to the Su-27/J-11A, the J-11B has been upgraded with:

- An indigenous multifunction pulse-Doppler fire-control radar, capable of tracking 6-8 targets and engaging 4 of them simultaneously.
- An indigenous digital flight control system.

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A strap down inertial navigation system (INS)/Global Positioning System (GPS) navigation system.

A glass cockpit featuring four color multifunctional displays and wide angle Head-Up-Display (HUD).\(^{384}\)

Equipping the J-11B with a Chinese fire-control radar enables the aircraft to use Chinese manufactured air defense weapons, such as PL-8 SRAAM and PL-12 active homing MRAAM with capabilities comparable to the U.S. manufactured AIM-120A AMRAAM missile. For offensive operations, the J-11B can carry indigenous strike ammunition such as LT-2 laser guided bombs, the LS-6 precision guided glide bomb, the YJ-91 (Kh-31P) anti-radiation missile, and the KD-88 air-launched Land-Attack Cruise Missile with an expected range of 180-200km. The aircraft has an impressive self protection suite including a new UV band Missile Approach Warning System (MAWS) in the rear hemisphere, which only the most modern western fighters have.\(^{385}\) Looking at the specifications, this is a very capable fighter. 90% of the major subsystems are Chinese made, including the radar and optical electronic systems. However, the Chinese parts have a very short life span, and the J-11B has suffered from technical glitches. One system with problems has been the IRST/LR system, which has restricted its use in training.\(^{386}\) However, with the renewed improved strategic relationship between Russia and China, it is possible that further Russian technological assistance will help improve Chinese aviation manufacturing standards.

J-10A is a single engine multi-role combat aircraft - the most modern indigenously produced Chinese fighter. Chengdu Aircraft Corporation (CAC) started the development of the J-10A in the mid-1980’s, and it made its first successful flight in March 1998. CAC continued its development of the fighter, so that the PLAAF now has an inventory of about 100 modern J-10A combat aircraft. Evidence of its mature status is that it participated in flight demonstrations and static display for the first time in the 2008 Zhuhai Airshow in China.\(^{387}\) China has made some significant improvements in its aircraft industry. The J-10A has an indigenously produced pulse-Doppler radar capable of tracking 10 targets and engaging 2 using semi-active homing, or 4 using active homing air-to-air missiles.\(^{388}\) It has a modern cockpit with color multifunctional displays, wide field of view HUD and a helmet-mounted sight that gives great close-in combat capabilities, and is capable of receiving target data from AWACS via satellite data link. The J-10A is a multi-role fighter that can carry a variety of Chinese produced precision weaponry. For close-in air combat it uses PL-8 SRAAM, and for longer ranges it

uses PL-12 MRAAM, the most advanced Chinese produced AAM. J-10A can conduct all-weather off-
ensive missions fitted with a forward looking IR and laser target designating pod, enabling it to use
laser designated pods. A model of the J-10 has shown the aircraft equipped with a navigation pod as
well, which would enable the J-10A to use satellite navigation guided weapons as well.

The J-10A has In Flight Refueling capability, but it is the Chinese manufactured system that
enables it to refuel from the lesser capable H-6U and not the IL-78 that China is in the process of ac-
quiring. The power of a fighter engine is crucial for its air combat performance, endurance and range.
The J-10A is equipped with the Russian AL-31FN engine, and only has a range of 600km compared to
the Su-30 combat range of 1500km. China has been working on producing their own engine (WS-
10A) for the J-10, but so far they have not succeeded. In summary, the J-10A is a modern combat
aircraft competitive in cardinal parameters compared to the current European technology. ^389 CAC
continues to develop the fighter, and has recently developed a two seated J-10S.

In March 2009, the first pictures were found on the Chinese internet of a J-10B prototype, which
has some distinct visible differences from the J-10A such as:

- IRST/LR, as they are seen on J-11.
- Wide-angle holographic HUD as seen in J-11B.
- Reshaped vertical tail enabling an enlarged EW suite.
- New Radar Warning Receiver.
- New nosecone leaving space for a new radar.
- Diverterless Supersonic Inlet. A new and sophisticated air intake with enhanced supersonic capabili-
ties.

The J-10B appears to use the same engine as J-10A. The appearance of this prototype is evidence of
a continued development program that has been very successful.

The J-8F is the first true multi-role version of the J-8, ^390 which first flew in 2000. In spite of the
aircraft being developed from an older 2nd generation type of aircraft, this version has been upgraded
into a new generation. Being equipped with an updated fire-control system and radar, the J-8F is
able to fire the advanced PL-12 Active Radar Homing MRAAM as well as the LS-6 GPS/INS precision
guided glide bomb with a range of 60 km. ^391

The J-8F can be equipped with an air refueling probe, and experiments have been carried out with

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data-link on the J-8F. With these modifications, the PLAAF has managed to create a cheap fighter, which has a limited close-in capability, but has obtained an impressive modern all weather medium range air-to-air capability with improved situational awareness, which is a very important force multiplier. It is not at the level of the Su-30, J-10 or J-11, but still the J-8F has become a credible fighter with modern capabilities.

Offensive Aircraft

JH-7, which the PLAN also flies, is a classic example of how the PLAAF have improved a first generation fighter bomber into a second-third generation aircraft. The JH-7 is a twin engine, tandem-seated fighter bomber, which first flew in the late 1980’s. In the 1990’s, it went through a modernization program which essentially turned it into a new fighter, now designated JH-7A. The JH-7A is an offensive fighter with all weather, day/night precision strike capabilities, but with no in flight refueling capability and with limited air-to-air capabilities, as it can only carry short range air-to-air missiles. It has a pulse-Doppler multi-functional fire-control radar with look down/shoot down capabilities, INS/GPS navigation with a combat range of 1650 km, two large multi-functional displays, HUD, fly-by-wire and automatic terrain-following capabilities. Target data is received through data link. JH-7A can carry two LS-6 laser guided bombs and a targeting pod. It can carry YJ-91 anti-radiation missiles and KD-88 TV guided air-to-surface missile. The PLAN JH-7A is primarily for the anti-ship role, capable of firing up to four YJ-81K anti-ship missiles with a maximum range of 50 km. With these capabilities, China has managed to turn the aging JH-7 into a capable weapons platform, which may pose a serious threat to an enemy navy.

Q-5 is a ground attack aircraft, which first saw flight in the 1970’s. However, due to a series of modernization programs, China has managed to improve it, enabling it to operate on the modern battlefield. Through many iterations of upgrading, the latest version of the Q-5 first came out in 2007. It is fitted with an internal laser spot tracker, and is capable of carrying two LS-6 500kg laser guided bombs or a laser designator pod. Due to its limited lift capability, it cannot carry both bombs and a pod. To drop laser guided bombs, it therefore relies on laser designation from a forward air controller on the ground, or on another Q-5 doing buddy lasing. The Q-5 has improved avionics including HUD, GPS/INS navigation, radar warning receiver, chaff/flares and carries short range air-

to-air missiles for self protection. Q-5 is not the most advanced Chinese fighter, but it is cheap and its specific ground attack role is growing in importance as the PLA is becoming increasingly joint in its operations.

H-6 Long range bomber. China’s only long range bomber is the H-6 bomber, a Chinese manufactured version of the ancient Soviet Tupolev bomber Tu-16 (Badger). It is a 40 year old design, and the Chinese have extended its service life beyond 2015. To prolong the service life of the H-6, Xi’an Aircraft Corporation (XAC) reopened the production line of the H-6 in the 1990’s, and has improved the H-6 over several iterations. The combat mission of the H-6 is long range bombing, and its capabilities would be particularly useful in a potential Taiwan operation, due to its ability to carry either 9000kg of free fall bombs, or by attacking strategic targets with KD-63 Land Attack Cruise Missiles (LACM). It is also designed to counter the approach of the U.S. Navy in a Taiwan operation by the use of YJ-6 or the more modern YJ-81 anti-ship missile, of which it can carry four. XAC latest version, the H-6K, had its maiden flight in January 2007. The upgrade incorporates 6 missile carrying wing pylons, two more than previous models, a glass cockpit, ejection seats, composite materials, hence lighter weight, which, together with new engines, will increase its combat range from its current range of around 1800 km. It is likely in the future that the H-6K will also be able to drop satellite navigation aided bombs, which will give the PLA an extraordinary capability similar to the modern version of the B-52 bomber in the U.S. Air Force (USAF). The H-6K is not yet seen in operational units, and it is likely that the PLA is considering its options for a future long range bomber.

**Weapons**

China relies on Russian weapons for its Russian built fighters, whereas she produces her own missiles and bombs for indigenously produced aircraft. The Chinese produced weapons are either produced with Russian assistance or are copies of Israeli weapons. The general trend of the Chinese weapons acquisition and development is the same as in the West, focusing on supersonic speed, high maneuverability, extended range, multiple engagements and precision. With this trend, the PLAAF and the PLAN Air Force (PLANAF) fighters and bombers must be considered to be a serious threat to any potential opponent in the future.

Air-to-Air. The PLAAF and the PLAN have advanced air to air capabilities, which includes all-aspect angle SRAAM as well as advanced MRAAM active homing missiles, giving the fighters a multiple en-

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gagement capability, which is required for modern warfare.\textsuperscript{399} The fighting capabilities are improved by helmet mounted cuing of the missiles in close-in air-to-air combat, as well as data link exchange of a recognized air picture, which gives the pilot good situational awareness.

Air-to-Surface weapons are developing rapidly as well. In recent years, China has developed laser guided bombs and laser designation pods as well as LACM.\textsuperscript{400} These new capabilities are likely to set the trend for the future development of air-to-surface weapons. With this, the PLAAF and the PLAN are developing capabilities that will enable them to bomb strategic and operational level targets, giving them the ability to strike where it hurts the most. However, a precondition for this capability is that China must possess advanced satellite capabilities that will enable them to identify and develop target descriptions for precision engagement, as well as satellites for precision navigation deep in the enemy rear area. By 2015, China will have established such a global satellite navigation capability, as will be discussed in chapter 11: PLA Satellites in Support of Conventional War.

Anti-ship missiles. Chinese anti-ship missiles are a big concern to the U.S. Navy, who in case of a Taiwan crisis will face the prospect of sailing within range of a large number of very capable anti-ship missiles, some of which are air launched. JH-7\textsuperscript{401} and H-6M can carry four YJ-81 (C-801) anti-ship missiles, and may also be able to carry the KD-88 LACM for a precision strike role.\textsuperscript{402} An air launched version of the YJ-83 (C-803) may have been developed.\textsuperscript{403}

\footnotesize
\textsuperscript{403} Jane’s Naval Weapons Systems, “CSS-N-4 Sardine (YJ-1/C-801); CSS-N-8 Saccade (YJ-2/YJ-82/C-802/Noor); YJ-83/C-803; YJ-62/C-602; CY-1”, 15 June 2009.
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Air Defence

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Table 2: PLAAF Aircraft Weapons Capabilities

*) Second generation aircraft fitted with modern precision weapons.

**: IL-78 has been ordered from Russia but has not been delivered to the PLAAF yet.

Force Multipliers

Airborne Early Warning and Control

The PLAAF is fully aware of the importance of having an airborne early warning and control system (AWACS), which is a core asset in the Chinese Informationization project. In a Taiwan conflict, or an encounter over the South China Sea, an airborne early warning platform would be crucial for generating an identified air and surface picture, as it can cover a much larger area than ground or ship mounted radars. The fact that the PLAAF has developed three different AWACS models simultaneously is evidence of just how important this capability is to the PLA.

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404) Data obtained from Jane's Defense and Sinodefence.com.

KJ-200 Airborne Early Warning and Control aircraft has a linear-shape Active Electronically Steered Array (AESA) radar similar to the SAAB Erieye Surveillance System. On Sunday 4 June 2006, it was reported that a KJ-200 had crashed with crew and technicians onboard, causing a major setback for the KJ-200 program. In May 2009, information came out that the PLAAF and the PLANAF had ordered a number of KJ-200.\footnote{Chinese Military Aviation, “KJ-200”, 6 March 2009, (http://cnair81.cn/y-8x_sh5_a-50i.htm), (http://www.sinodefence-forum.com/air-force/plaaf-awacs-thread-23-951.html).}

In 2005, a third AEW was revealed. Once again the Y-8 is used as the airframe, but this time with a large round disk antenna mounted on its back. The Y-8 Rotodome AEW aircraft has now reached a level of maturity allowing China to enter a Joint program with Pakistan,\footnote{Rupee News “Pakistan – China Jointly Build Y-8/9 AWACS and Saab 2000”, 17 April 2008, (http://rupeenews.com/2008/04/17/pakistani-china-jointly-built-y-89-awacs-saab-2000/).} which has ordered the delivery of four Y-8 AEW from China.\footnote{The International News, “China to Provide Pakistan with four AWACS aircraft”, 7 September 2008, (http://thenews.com.pk/updates.asp?id=54260).}

The KJ-200 and KJ-2000 are equipped with a friend or foe identification systems, have data links to naval ships,\footnote{Larry M. Wortzel, PLA Command, Control and Targeting Architectures: Theory, Doctrine and Warfighting Applications”, Chapter 5 in Roy Kamphausen and Andrew Scobell, “Rightsizing the People’s Liberation Army: Exploring the Contours of China’s Military”, Strategic Studies Institute, U.S. Army War College, September 2007, p.214.} and are compatible with the Chinese produced aircraft J-7, J-8, J-10, J-11B, JH-7 and H-6.\footnote{Phillip C. Saunders and Erik Quam, “Future Force Structure of the Chinese Air Force”, Chapter 8 in Roy Kamphausen and Andrew Scobell, “Rightsizing the People’s Liberation Army: Exploring the Contours of China’s Military”, Strategic Studies Institute, 2007, p.398 (www.strategicstudiesinstitute.army.mil).} However, it is unclear whether the data link has connectivity with the Russian produced Su-30 and Su-27. If indeed the Chinese assembled J-11A, which is based on Su-27, is interoperable with the data link, then there is a possibility that the Russian built aircraft can get on the network. With the creation of an effective tactical air network, the fighter pilots’ situational awareness will improve dramatically, which will turn the PLAAF into a significantly better fighting force. Pilots will be aware of the situation all around them. They will know friends from foes, and the will be able to coordinate their attack plans.
Electronic Intelligence and Electronic Warfare Aircraft

As a part of Informationization, the PLA is prioritizing the development of an electronic warfare capability. They have therefore spent much energy on developing an airborne electronic intelligence (ELINT) collection and electronic warfare (EW) capability. To economize the effort, all versions of these aircraft have been built on the basis of the same airframe, the Y-8, originally a small transport aircraft. The various versions are:

- Y-8 Goaxin 1 – EW/ELINT collection - PLAAF
- Y-8 Goaxin 2 – Signal Intelligence (SIGINT) collection – mostly used by PLAN
- Y-8 Goaxin 3 – Communications Relay between ground forces and combat aircraft
- YG-8 Goaxin 4 – EW – Stand-Off jamming.
- KJ-200 Goaxin 5 – Airborne Early Warning and Control – crashed.
- Y-8X Goaxin 6 - Maritime Patrol Aircraft (MPA) – submarine hunting
- Y-8J Maritime Surveillance Aircraft

The diversity in capabilities of these aircraft is evidence of the priority the PLA puts on EW, and of the knowledge they have not only in terms of the electronic components, but also in aircraft design and aerodynamics. The PLAAF and the PLAN only have a few aircraft of each type, which is a great vulnerability, but it is unlikely that these aircraft will be built in great numbers until the EW technology that they carry has reached a satisfactory level of maturity. With the emphasis China is putting on informationization, it must be expected that the PLAAF and the PLAN in the future will be able to fuse the information they acquire from these assets real-time into a common database, create an identified joint operational picture, and link it back to the maritime and airborne combat platforms in near real-time. With such a capability, the PLA will become a formidable force to be reckoned with. Even the older platforms, carrying modern precision stand-off weaponry, will become lethal assets because of the situational awareness they will acquire.

Air Ground Surveillance

The U.S. has developed an aircraft called Joint Surveillance and Target Attack Radar System (JSTARS), which is an airborne battle management platform that is of great importance to the joint intelligence collection regarding the situation on the ground. It is an airborne radar station which is capable of detecting moving ground objects and slow moving aircraft and helicopters, and compile a ground picture. The data is fused with other intelligence information and linked to U.S. Army and Ma-
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There is no public available information that indicates that China is developing a similar program. This capability is of extreme importance to army operations in the U.S., and the fact that China seemingly is not developing a similar capability is an indication that they have not yet prioritized joint ground operations, but are prioritizing air and maritime operations. However, it must be expected that China will develop an air ground surveillance capability in the future.

**Air-to-Air Refueling**

The PLAAF has converted a limited number of H-6 bombers into tanker aircraft, designated H-6U (PLANAF: H-6DU), which are capable of refueling the Chinese produced J-8 and J-10, but not the Russian produced aircraft. This provides the PLAAF with a limited extended offensive capability, using J-10 and J-8F, totaling approximately 140 aircraft. The PLAAF has ordered four IL-78 Tanker aircraft in Russia. The IL-78 is a larger and much more capable tanker, capable of refueling Su-27, Su-30 and J-11, which equates to 270 of the most modern aircraft the PLAAF and the PLAN have. This acquisition is important for the PLAAF, since it will extend the range of the Anti-Radiation missile firing Su-30, which will enable air operations at a much greater range.

**Air Transport**

The PLAAF air transport fleet is lacking, considering the vast distances across the country and the size of the PLA forces. The PLAAF only has 14 IL-76MD large strategic transport aircraft and a large number of older small or medium sized transport aircraft. The transport aircraft have an important task in providing air transport for the 15th Airborne Corps under the PLAAF as well as inter-regional and strategic transport for the ground forces.

In 2005, China signed a contract with Russia for the purchase of 34 IL-76 heavy transport aircraft and 4 IL-78 air refueling aircraft, capable of refueling PLAAF and PLAN Russian built fighter aircraft Su-30MKK/MK2, Su-27SK and J-11. However, in the meantime the Russians for strategic reasons decided to move the factory from Uzbekistan to Russia, which turned out to be very expensive. In addition, the agreed upon price for the aircraft was very low, and a subsequent falling dollar exchange rate and Russian inflation made it impossible to build the planes. The Russians wanted to renegotiate the deal, but China refused, which caused years of delay. In December 2008, negotiations were

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413) SIPRI, “Register of transfers of major conventional weapons, 2008”, SIPRI, 27 April 2009, p.11.
reopened. Russia is aiming at renegotiating the price, and in return China wants a more updated version of the aircraft. It is possible that China aims to get the latest version of the IL-76, the IL-476 updated with a digital flight control system, glass cockpit and new engines.\footnote{Andrei Chang, “China to renegotiate Russian aircraft deal”, UPIAsia.com, 10 June 2008, (http://www.upiasia.com/Security/2008/06/10/china_to renegotiate_russian_aircraft_deal/4507/).} However, it is unlikely that the factory will be producing until 2010.\footnote{Jon Grevatt, “China’s Illyushin order face further delays”, Jane’s Defence Weekly, 18 December 2008.} This deal will provide a much needed strategic air transport capability that will not only enable rapid deployments across the vast distances within China, but also enable deployments and resupply of forces abroad.

China is also negotiating with the Ukrainian Antonov company on the joint design of a large transport aircraft.\footnote{Andrei Chang, “China to build large military cargo plane”, 24 November 2008, (http://www.upiasia.com/Security/2008/11/24/china_to_build_large_military_cargo_plane/5027/).} The experiences of the Antonov company will be very useful to China. Together with Russia, Antonov has developed the AN-70 that features digital flight control system, glass cockpit and four counter-rotating propfan engines. Antonov offers a variety of modifications to its aircraft, such as an EW self protection suite, flying command post, patrol aircraft, and a modification to a tanker aircraft.\footnote{Antonov website, “AN-70”, downloaded 18 December 2008, (http://www.antonov.com/products/air/transport/AN-70/index.xml;jsessionid=aRU91G3vtyk5).} Ukrainian sources indicate that the Chinese version will be different to the AN-70, and will be equipped with four jet engines. This deal, combined with the IL-76/78 deal, will provide the PLA with a much needed strategic transport capability for the future. In November 2009 the Chinese aircraft manufacturer AVIC announced, that it by the end of December 2009 would reveal a prototype of a 200 ton heavy military transport aircraft powered by four Russian turbofans.\footnote{Sina.com, “(200吨级最大军用大飞机年底亮相)”, “200 ton large aircraft the largest military appearance”, 6 November 2009, (http://news.sina.com.cn/c/2009-11-05/140016559915s.shtml).}

Unmanned Aerial Vehicles

China has operated UAVs as target drones for gunnery practice since the 1980’s.\footnote{GlobalSecurity.org, “Unmanned Aerial Vehicles (UAVs)”, 6 January 2009, (http://www.globalsecurity.org/military/world/china/uav.htm).} In 1994, the PLA acquired the Israeli Harpy UAV, which also has an anti-radiation cruise missile function. It is launched from a ground station or a ship, and then flies at low speed to the operating area, where its radar seeker constantly looks for enemy radars. Upon detection, it dives vertically onto the radar and destroys it.

Chengdu Aircraft Corporation (CAC) is developing the Xianglong (Soaring Dragon), which is a high altitude, long duration reconnaissance UAV, intended for maritime surveillance. It is similar in size to
the U.S. RQ-4 Global Hawk UAV, but has far lower performance parameters.\textsuperscript{421} The U.S. Global Hawk can fly at 65,000 feet for 42 hours, and it can stay on station for 24 hours over an area 5400 km away.\textsuperscript{422} The Xianglong, on the other hand, can fly at a maximum altitude of 57,000 feet and has a range of 7000 km.\textsuperscript{423} Where the Global Hawk can carry a payload of 860 kg, the Xianglong can carry 650 kg. The differences are most likely due to inferior Chinese engine technologies, but China has a large ongoing engine development program for all its aircraft, and it is likely that they at some time in the future will be able to produce engines with a performance equal to western jet engines. The Xianglong UAV was spotted doing taxi tests at the Chengdu factory in September 2008, and flight testing will begin in 2009. If CAC is successful in developing the Xianglong, it can be expected to enter limited service in 2011-12.

The Shenyang Aircraft Design and Research Institute under AVIC I is developing an Anjian (Dark Sword) unmanned combat aerial vehicle (UCAV), a model of which was on display at the 2006 Zhuhai air show.\textsuperscript{424} A closer look at its design will reveal that it could become a long-range, high speed strike platform, or an air-to-air combat platform. It uses stealth technology, and its large air intake indicates that it could be powered by a Ramjet propulsion, which would give the UAV very high speeds.\textsuperscript{425}

Rapid Reaction Units/Emergency Mobile Operations Units
The PLA equivalent of the NATO term Rapid Reaction Unit is Emergency Mobile Operations Unit (EMOU).\textsuperscript{426} Since the 1980’s, the PLAAF has had small units dedicated as EMOU. A few units are designated to be on high alert, and they are mostly supplied with the newest equipment, and are capable of deploying over long distances in a short period of time. They are found in all MRs. They can be deployed locally or wherever needed in the country. They have limited experience from deploying abroad, but it is likely that these are the units that are designated to participate in the few exercises

\begin{itemize}
\item \textsuperscript{423} Satnews Daily, “Xianglong UAV Being Developed by China”, 23 October 2003, (http://www.satnews.com/cgi-bin/story.cgi?number=301313633).
\end{itemize}
abroad that the PLAAF has participated in. The PLAAF 15th Airborne Corps comprising three divisions is considered to be a strategic reaction force.\footnote{James C. Mulvenon, Andrew N.D. Yang, “Seeking Truths from Facts, A Retrospective on Chinese Military Studies in the Post-Mao Era”, 2001, National Security Research Section, RAND. p.54.}

\textbf{Air Command and Control}

Information about the PLAAF C2 systems is scarce, and it is very likely that exactly this capability is being improved dramatically in the context of informationization. In the 1980’s, the PLAAF developed an integrated Air Defense Command and Control System (ADCCS), consisting of a “Regiment Station System” (RSS) and an automated fighter control system for ground control interception missions known as “Guidance System” (GS).\footnote{Sinodefence.com, “Air Defence Command and Control Systems”, 9 May 2007, (http://www.sinodefence.com/electronics/c3i/air-defencec-3i.asp).} ADCCS consisted of radars, data, communication, computers, displays and software. The system was able to automatically process target information forwarded from different radar stations and calculate a best solution for an intercept mission, and then direct fighters to the targets. This system was designed to support air defense operations, which was the main focus of air operations at the time. However, a defensive system was not enough to support the offensive doctrine which was implemented in 1990, nor was it suitable in the context of a potential Taiwan operation, where the PLA would engage in offensive operations against the island. Therefore, the PLA started development of a Theatre-level Automated C2 capability in the 1990’s, known as Regional Integrated Electronic System, or “Qu Dian”, which is equivalent to the U.S. Joint Tactical Information Distribution System (JTIDS).\footnote{Sinodefence.com, “Regional Integrated Electronic System (“Qu Dian”) – Project 995”, 27 January 2007, (http://www.sinodefence.com/electronics/c3i/qudian.asp).} The Qu Dian will be described in more detail in chapter 9, Joint Doctrine and Training in the PLA. ADCCS was an air force system, whereas Qu Dian is a joint system, capable of compiling a joint operational picture (land, air, maritime) based on data fused from all services. It is regionally focused in the Southeast China in the Nanjing and Guangzhou MRs. From the PLAAF perspective, Qu Dian compiles an identified air picture and distributes it to the PLAAF aircraft and surface to air missile (SAM) systems through data link. Qu Dian is designed to support a potential Taiwan operation, which is most likely planned in great detail in peacetime. The PLA is likely to have planned a strategic and operational offensive air campaign, which includes static and moving targets. Qu Dian will have the capability to detect moving targets, including land based as well as maritime surface and subsurface targets, by the use of imagery satellites equipped with Synthetic Aperture Radars (SAR). It will also enable satellite based post attack reconnaissance, which is important in assessing the effectiveness of ongoing operations.
In June 2009, a PLA Daily news flash said that that the PLAAF in Nanjing MR had been exploring the use of a “flying control tower commanding for the aviation troops”\textsuperscript{430} This also suggests that the PLAAF is developing an airborne C2 platform. As it is demonstrated below, the PLAAF has also developed a concept for airborne mission commanders, and these changes establish a trend of authority to lead tactical operations being delegated to airborne mission commanders at the tactical level. This suggests that the PLAAF is adopting a concept of centralized planning and decentralized execution similar to Western air forces.

**PLAAF Air Power Doctrine and Training**

Historically, the PLAAF has used Soviet tactics and equipment. This meant that the PLAAF had inferior aircraft and lesser skilled pilots than their western counterparts, and as such the PLAAF used the philosophy of fighting in great numbers, saturating enemy air defenses and tolerating great losses. However, as Chinese aircraft are becoming much more expensive and limited in numbers, the PLAAF is likely to move away from attrition warfare and change to a Western style philosophy, where each and every aircraft and pilot holds great value, and must be protected.

Most of the information that is available about the PLAAF is technical information about aircraft and weapons, and there is only very limited information available on how good the Chinese pilots are or how effective their training is. In August 2002, Major General He Weirong, the PLAAF’s deputy chief of staff for training, addressed this question in a significant article that revealed the state of PLAAF pilot training.\textsuperscript{431} In the article General He identified serious flaws in the PLAAF training regimen. He pointed out that western pilots carried out large amounts of tactical and technical training based on real requirements at their flying academies and transitioning bases, whereas PLAAF pilots do not conduct tactical training until they have been assigned to their tactical units. During technical training the pilots do not deviate their altitude, speed or direction, and General He saw this as a main reason for the PLAAF inflexible combat methods.\textsuperscript{432} Targets used during training were large visible triangles or circles and the pilots flew under strict ground control, preventing flexibility or creativity. General He concluded his article by recommending that “the PLAAF should use real war requirements as the standard and completely overhaul the entire training program, training and teaching


\textsuperscript{432}) Ibid.
materials, manuals, scoring standards and regulations”. General He pointed out that the PLAAF had acknowledged the following limitations to becoming a modern air force:

- Lack of an air force strategy;
- Minimum per-pilot sortie generation capability;
- Reliance on strict ground controlled intercepts;
- Flying aircraft to less than full capabilities;
- Lack of dissimilar air aircraft training;
- Lack of upward professional mobility;
- Lack of over water flying;
- Inadequate combined and joint service training;
- No airborne early warning and control aircraft;
- No aerial refueling capability until the late 1990’s, and only limited since then.
- Insufficient airlift for the airborne forces;
- A force composed mostly of 30-year-old and other aging aircraft;
- Lack of good air-to-air missiles, precision guided munitions, and cruise missiles;
- A force still structured primarily for positional rather than mobile warfare, and,
- An aviation industry incapable of designing and producing weapon systems to meet the PLAAF needs.

The article was from 2002 and this chapter has already shown that the PLAAF is addressing many of these issues, such as providing more modern fighters, airborne early warning aircraft, more air transport and new missiles. But when it comes to training and combat capability, we know less but there are indications that things are changing.

**Air Defense Operations**

The PLAAF has historically focused on air defense operations, operating under strict ground control in accordance with the old Soviet tactical air doctrine. However, improvements in technology and training over the course of the past decade has enabled the PLAAF to create a modern air defense force that is adopting a Western style of air warfare. With Beyond-Visual-Range (BVR) active- and semi-active homing missiles, Chinese pilots are now training full scale air-to-air combat from beyond visual range into close-in air combat maneuvering. Training includes day/night and adverse weather. Where they previously would have been under strict control of ground controllers, the PLAAF has

433) Ibid.
changed its tactical doctrine to using airborne mission commanders,\textsuperscript{436} equipped with data link and authority to direct the battle from the air.\textsuperscript{437} As opposed to just a decade ago, pilots are now using Red-on-Blue dynamic training scenarios between dissimilar aircraft,\textsuperscript{438} and the introduction of data-link has improved the situational awareness and enabled pilots to carry out coordinated and much more efficient attacks.\textsuperscript{439} In the public domain it is not known how good the pilots really are, but it must be expected that the introduction of better weapons, data link and especially dynamic training methods, combined with sufficient flying hours will improve pilot proficiency and skills significantly.

\textbf{PLAAF and Offensive Operations}

Historically, the PLAAF’s main emphasis has been the achievement of air superiority, and only limited effort has been made towards offensive air operations. In the wars that the PLAAF has fought where offensive operations could have been conducted, they were often politically bound in order to limit the war. In the 1950-53 air war over Korea, the PLAAF had just been founded, and concentrated on establishing an air defense capability that was able to obtain air superiority north of the Yalu River. The PLAAF never managed to develop an offensive capability that could support the ground force effectively,\textsuperscript{440} and even today, the PLAAF and PLA ground force does not master the techniques and procedures of CAS in support of ground operations. During the first Taiwan crisis in 1954-55, the Kuomintang nationalist air force initially had air superiority over parts of the Chinese mainland, but through a concentrated effort, the PLAAF managed to push the nationalists back, achieve air superiority over the mainland and keep the air war over the Taiwan Strait. During the crisis, in the only true joint operation conducted by the PLA, China invaded several islands close to the mainland held by the nationalists. During this operation, the PLAAF was neither able to deliver effective air support to ground operations, nor of attacking enemy maritime vessels. The PLAAF did achieve some success in its offensive operations, but it was very limited.\textsuperscript{441} Since then, the PLAAF has not conducted support

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\textsuperscript{441} Ibid pp. 279-288.
\end{footnotesize}
of ground operations in wartime. Airpower was not used during the 1962 war with India,\textsuperscript{442} and in the 1979 war against Vietnam, it was a political decision to not use air power, in order to limit the scale of the war, which was reciprocated by Vietnam.\textsuperscript{443} It is important to note that PLAAF’s lack of offensive capabilities was caused by two factors. Firstly, a lack of technology and training, and secondly, a political desire to avoid escalation of the war by putting restrictions on offensive air operations. The PLAAF focus on defensive operations continued until 1987, when PLAAF Commander Wang Hai laid down a program formally stressing the importance of having a simultaneous defensive and offensive capability. Wang emphasized “that the combined arms combat environment of the 1980s required a force that could move quickly over long distances, could fight in an electronic environment, could have the capability to attack an enemy, and could keep the PLAAF from sustaining complete damage from an enemy air attack.”\textsuperscript{444} Until then, air power was seen as a defensive capability, but in 1996, Chinese leaders, including CMC Chairman Jiang Zemin and PLAAF commander Lio Shunyao, publicly emphasized the PLAAF’s capability to fight offensive battles.\textsuperscript{445} A series of wars in the time thereafter vindicated this change in philosophy. The USAF offensive operations in the 1991 Iraq war demonstrated the efficiency and importance of modern offensive operations. The overwhelming U.S. air campaign, which included counter air operations, CAS to the army, interdiction of rear-echelon ground forces, and also strategic attacks, convinced the Chinese that offensive air operations are a vital part of modern joint warfare. Second, the 1999 Kosovo war, which was fought exclusively with air power until a cease fire agreement was signed, demonstrated the ability of modern technology to put pressure on an enemy almost with impunity. Last, the 2003 Iraq war, where air power and ground forces showed the capability of modern joint maneuver warfare by completely overrunning the Iraqi forces. The PLAAF knew that they were technologically far behind the leading air powers, and that they had to catch up. In the ensuing modernization program, the PLAAF acquired 3\textsuperscript{rd} generation multi-role fighters with in-flight refueling capability, offensive and defensive stand off weaponry, precision munitions and laser designating pods.\textsuperscript{446}

But one thing is having the advanced technical equipment, another is to be good at using it. The PLAAF training of offensive operations has become more sophisticated in resent years. The teaching of senior and middle ranks commanders as air mission commanders is now more demanding, with

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\textsuperscript{443} Andrew Scobell, “China’s Use of Military Force, beyond the Great Wall and the Long March”, Cambridge University Press, 2003,p. 126.


\textsuperscript{445} Ibid.

\end{footnotesize}
new teaching methods and materials and a campaign simulating training center.\textsuperscript{447} The PLAAF is holding offensive training exercises, involving large formation offensive over-water missions, training offensive and defensive operations in a complex jamming environment.\textsuperscript{448} There are signs that they are decentralized the tactical planning of missions\textsuperscript{449} and that they are developing an all-weather capability\textsuperscript{450} as well as a night capability.\textsuperscript{451} But how good were they? We do not know, but when we compare this training to the flawed training regimen General He mentioned above, then this is evidence of a real positive development. There is no doubt that it will still take many years to develop capabilities equivalent to the Western air forces.

Safe delivery of bombs in close proximity to own ground forces is a very difficult operation, and the PLAAF is still not skilled in the classic conventional close in air support to ground operations, as it is done by NATO forces for instance in Afghanistan. However, the sophisticated weaponry that the PLAAF is currently acquiring will make it easier to perform these missions, and it is the expectation of this author that the PLAAF will be able to conduct CAS within the next 10 years. Laser designators and laser guided bombs will enable precision delivery of weapons close to own forces with much less risk. Aircraft maneuvering during precision weapon delivery is relatively simple, compared to low level delivery of unguided bombs under hostile fire. With the Chinese program of networking its forces, it must be expected that Chinese Forward Air Controllers, like in NATO, will acquire hand carried digital planning tools with data link to the fighters, enabling them to communicate and exchange target information in a secure and efficient manner. Based on this, it is reasonable to conclude that it is likely that the PLAAF will acquire the sophisticated offensive capability it lacked historically, leading to the ability to provide CAS to ground operations.

Currently, the PLAAF offensive capability suffers from a significant range limitation. The PLAAF only has a limited numbers of long range bombers, and its In Flight Refueling capability is limited. Accordingly, if the PLAAF were to conduct offensive operations, it would not be able to reach far into hostile territory, and would have to rely on its extensive inventory of ballistic missiles for this task.

Red Flag Training Environment

The PLAAF has made significant improvements in its training methods. In 1987, it established a flight test and training centre at Cangzhou airfield near Tianjin for testing new aircraft before they were deployed to an operational base. At the training centre, they established a “Blue Army” aggressor unit, similar to the concept seen at the U.S. Red Flag training centre at Nellis Air Force Base in the Nevada desert, which is one of the most advanced training facilities in the world.452 The aggressor aircraft, mostly F-7 and F-8, simulate offensive and defensive operations, providing dissimilar air combat training for Su-30, Su-27, J-10 and J-11. In 1958, the PLAAF built a large training centre at Dingxin (Shuangchengzi) Air Base in the Gobi Desert (40°24’0.62”N / 99°48’4.94”E), which in the 1990’s was expanded into a large formation training centre, where multiple formation tactics could be trained. The training range has a sophisticated C2 system and is equipped with SAM/AAA systems, and also has a mock up of Taiwan’s Chingchuankang (CCK) airbase, including the runways, air defense SAM and AAA sites, radars, command posts, ammunition depots, and oil depots.454 Training includes formations encompassing KJ-2000 AWACS, electronic support measure aircraft, tankers and fighters of all types, which is evidence of a mature training environment capable of developing advanced tactics and techniques required for effective modern offensive and defensive air combat. There is no doubt that this facility is a perfect setting for training airborne mission commanders, and that it will improve the skills of the pilots significantly. A lot of new tactics and new technological ideas are likely to be developed at this training centre in the future. In recent years, the PLAAF pilots have been practicing more sophisticated air-to-air combat with aggressor units, training in an ECM environment, conducting over sea live missile firing, dropping live bombs at ranges, flying at night and in adverse weather conditions, as well as at low altitudes.455

453) Term used for opposing aircraft using other nations tactics and maneuvers.
Flying Hours

In the IISS Military Balance 2009, it is stated that “fighter, ground attack and bomber pilots average 100-150 flying hours per year.”\(^\text{456}\) We do not know the exact allocation of flying hours to the different kinds of pilots (fighter, ground attack and bomber), however, it is unlikely that pilots flying complex multi-role missions with offensive and defensive aspects to the training, are given the same amount of flying hours as pilots in less sophisticated planes doing only air defense missions or long range bombing missions. NATO pilots fly around 180 hours per year\(^\text{457}\) and with that they are able to achieve a high level of proficiency in both offensive and defensive missions (multi-role), and are not only able to become very capable at handling the aircraft, but will have further training opportunities to be innovative and develop tactics, techniques and procedures, and improve combat capability in large formations where aircraft have different roles and missions. Considering that the PLAAF pilots have to train multi-role as well as the new role of “airborne mission command”, this level of training is required. It is unclear how many flying hours the PLAAF fighter pilots are allocated, but if they are ever to achieve the same levels of combat capability as NATO pilots, they should at least be allocated 180 flying hours per year. To compensate for a lower number of flying hours, the PLAAF pilots use simulator training extensively.\(^\text{458}\)

Airbases – Infrastructure

Base infrastructure is vital for air operations, and the effective use of runway systems, air traffic control, dispersal areas, fuel, infrastructure, fuel resupply pipelines and munitions storage, are all required to enable effective flight operations. The PLAAF and the PLAN have more than 200 air bases in mainland China. Whilst many of them are legacy bases from the Cold War, a significant portion of them are being updated, and some have dual military-civilian use. The runway system is upgraded to handle heavy civilian passenger aircraft, which means the runway system can also withstand the weight of heavy transport aircraft, air refueling aircraft, AWACS etc. More than 13 of the bases are super hardened, with underground squadron or regiment sized hangars tunneled into the hillsides.\(^\text{459}\)

\(^{457}\) As an example, The Military Balance 2008 quotes the following average flying hours for fighter pilots: United States 189 hours, United Kingdom 188-218 flying hours, Spain 180 hours.
Modernization of the PLA Air Forces

The PLAAF is expanding and standardizing its logistics capacity at the airbases to provide cross servicing of PLAAF aircraft in support of rapid deployments of aircraft across China. They have implemented a “comprehensive multi-aircraft support full territory support system” that will support the strategic transformation objectives of the PLAAF. The enabler of this capability is standardization of procedures and requirements of their logistics support, which will provide the PLAAF with flexibility to move different aircraft types to any place in the country at short notice. The PLAAF has also standardized air base construction, logistics support systems, airbase management and their computerized information systems. Once these standards are in place, the PLAAF will have established a foundation that is necessary for creating a standardized, deployable logistics system that can support multi-type air operations outside China. In recent years, the PLAAF has practiced the use of highways and civilian air ports as emergency air fields. To establish such a capability, the PLAAF has developed deployable aircraft cross-service kits, which will be similar to what would be required for an out of region deployment kit.

Building and maintaining modern air bases and the associated infrastructure is a costly investment. For that reason, it is interesting to plot their location because it gives an indication of which geographical areas China attaches special importance to. The image below shows the location of the PLAAF and the PLANAF air bases.

462) The PLA has not published number or location of their air bases. When comparing various sources there is some uncertainty as to how many air bases PLAAF and PLANAF uses. This plot is derived from a comparison of lists of air bases published at www.sinodefence.com and www.globalsecurity.org. The existence of the air bases on this list has been verified on www.googleearth.com. The majority of air bases were active with aircraft parked on the runway system. A few showed no aircraft and very little activity on googleearth.com, but are listed here since they could be returned to active duty if required.
Figure 2 Chinese Air bases. Sources: Sinodefence.com, Globalsecurity.org and Googleearth.com

There are three geographical concentrations of air bases in China. One is within range\textsuperscript{463} of North and South Korea. This concentration is there for historical reasons due to Chinese participation in the 1950-53 Korean War, but it is also a Chinese preparation for a potential war between North and South Korea, which China will struggle to stay out of. The second concentration of air bases is around

\textsuperscript{463} “Within range” is set to 1000 km, which will allow China to use all types of offensive and defensive fighter aircraft in her inventory.
Modernization of the PLA Air Forces

the Taiwan Strait, showing that China has the potential to use air power against Taiwan. The third concentration is north and east of Vietnam and Myanmar. The cause for this concentration of air bases is most likely China’s efforts to defend herself during the Vietnam War, since China does not have any major political issues with neither Vietnam nor Myanmar that would justify such a concentration. China has territorial disputes in the South China Sea and is preparing herself for a potential crisis. China has built a 2500m runway, hangars, fuel storage and a harbor on Woody Island in the Paracels, capable of operating most 3rd generation aircraft, including J-8II, J-10A and Su-30MKK.464

On the Hainan Peninsular, a small number of bases are within 1000 km of the Paracel Islands in the South China Sea. If China were to establish a permanent fighter presence over the Paracel Islands, she will be able to use a combination of in-flight refueling and Woody Island as a forward refueling base. It is a vulnerable setup for the PLA, and especially Woody Island must be protected to ensure operations.

A final concentration of airbases worth noticing, is the line of air bases along the Mongolian border, which were most likely built during the Cold War between China and the Soviet Union in the 1960’s to 80’s.

China is establishing an in-flight refueling capability, but at the moment and for years to come that capability will be limited. This means that China’s ability to project air power to areas with no land air bases is limited. For that reason, it is equally interesting to determine where China has decided not to build air bases. A look at the map shows that China has a limited number of air bases along the borders to Kazakhstan, Kyrgyzstan, Tajikistan, Afghanistan, Pakistan, Kashmir, India and Nepal, which indicates that China is neither planning for nor expecting a military crisis in these areas for years to come.

Worth mentioning is also that as a result of China’s close relation with Myanmar, it is possible that China, in case of a crisis, could have access to Myanmar air bases. In 1994, China and then Burma made a deal, in which China would upgrade the infrastructure of Myanmar’s air bases.465 Due to this program, Myanmar now has no less than four air bases with 11,000 feet runways, suitable for fighters, large cargo aircraft, tankers, AWACS or bombers.466 A capability that exceeds what Myanmar requires for its own purposes with its current inventory of aircraft. Use of these bases will enable the PLAAF and the PLAN Su-30MKK/MK2 as well as J-11B to reach into the Indian Ocean and the Malacca strait.

Chapter 7

Figure 3: Circle indicating 1000 km range from Myanmar airbases

**Summary on the PLAAF**

The PLAAF is going through a transformation both doctrinally and technologically. Doctrinally, the PLAAF is changing from exclusively flying air defense to flying both air defense and offensive operations. Technologically, it is updating its aircraft, having relied on import of Russian fighters to acquire a quick improvement in their capabilities. There are indications of Russia now being reluctant to sell its latest and most modern fighters to China, because they are upset about China copying the Su-27, but more importantly, because China is becoming a competitor on the arms export market.
China’s resent export of JF-17 and J-10 to Pakistan has led to rumors of China having offered the J-11B, which is in direct competition with Russian aircraft. The PLAAF will therefore to an increasing extent have to rely on the indigenous production of J-10, J-11B, and of its next generation fighter.

Compared to the technology the PLAAF was in possession of just 10 to 15 years ago, the PLAAF has gone through an impressive modernization. It is using high performance fighters with data link and stand-off weapons, both air-to-air and air-to-ground. It has developed the technology to do precision bombing; both laser guided and by satellite navigation. The technology used is still rudimentary compared to Western standards, but never the less, the PLAAF has the basic technology, from which it can develop further, which they most likely will. Organizationally, the PLAAF is not changing much in its peacetime organization, but its wartime organization is changing significantly in line with changes to the tactical doctrine. In the past, air defense was flown under strict ground control, and pilots only acted on instructions. This is changing significantly as execution of tactical level operation is being decentralized. Tactical command authority has been delegated to airborne mission commanders, who can make tactical decisions for their individual group of aircraft. This is more or less equivalent to the Western concept of large force employment. It is a complex and difficult concept to master, and it will take many years for the PLAAF to refine the procedures and make them effective. However, once they master the concept, the PLAAF will be a much more effective fighting force. In parallel, the PLAAF has also changed its training concepts from stereotyped pre-scripted setups to dynamic Red vs. Blue unscripted scenarios. This change is likely to improve pilot proficiency in the future significantly.

It will take many years for the PLAAF to reach the combat capabilities of Western air forces, but the initiatives taken by the PLAAF will most certainly reduce the gap significantly in the next 10 to 15 years.
Chapter 8

8.

PLA's Blue Water Navy

Introduction
At 7:00 AM (Beijing time) on the 27th April 2009, the Varyag Aircraft Carrier, which China bought from Ukraine in 2002, was transferred to a dry dock in Dalian Shipyard. Immediately after arrival to the dry dock, major repair work and modifications of the carrier were started, in order to ready the carrier for operational use. This will be China’s first aircraft carrier, and China has been preparing the world for this moment by releasing a number of messages. It started on the 16th November 2008, after the 2008 Olympics, when Major General Qian Lihua, Director of the Chinese Ministry of National Defense’s Foreign Affair Office said to a reporter from the English Financial Times that “The world should not be surprised if China builds an aircraft carrier, but China would only use such a vessel for offshore defense”. China is keenly aware of the delicate nature of this decision, as it knows that it will be interpreted internationally as a change of naval strategy from an offshore defense strategy to a power projection strategy. Hence the official Chinese insistence of a continued offshore defense strategy. The international press relayed the article from the Financial Times, and it achieved significant attention across the world. Over the following months, the Chinese released a series of unofficial press announcements about the aircraft carrier and the future development of the navy, in an information campaign to prepare not only the international community, but also the Chinese people, about what was forthcoming. In the following, these messages are outlined, as they not only reveal that China will acquire aircraft carriers, but they link the creation of a blue water navy with the national security strategy, and importantly; they show how widely this decision is founded in the top party leadership. The development of a PLA blue water navy is a fundamental change of the PLAN, and this will be the focus of this chapter.

19th November 2008: the China Daily newspaper brought an article in which Chinese experts

469) A strategy designed to defend the Chinese territory against hostile attacks from the sea. Focus is protection of the territorial sovereignty.
470) A strategy which implies the use of military force for other purposes of territorial defense and away from the homeland. In the context of China and this chapter focus is on the safeguarding of China’s national interests in relation to the sea.
defended China’s right to possess aircraft carriers, reconfirmed the country's defensive policy, and said that with 18,000 km of coastline and a maritime territory of 3 million square km., it was a normal demand to have an aircraft carrier. There are nearly 30 carriers around the world, and almost all members of the UN Security Council possess carriers, except China. The U.S. has 11 carriers, and developing countries like Thailand and India have carriers.471

On the 26th December 2008, China deployed two destroyers and a supply ship to participate in the international operation against piracy in the waters off Somalia.472 This was the first operation of the Chinese navy outside its own waters in 600 years, and it naturally lead to a lot of speculation about a future Chinese blue water navy, especially as it followed the above press releases about the aircraft carrier plans.

31st December 2008: Chinese military and shipbuilding sources reveal that China is to start building the first out of two 60,000 tons aircraft carriers in Shanghai in 2009. It is to have conventional propulsion and will be assigned to the PLAN South Sea Fleet to patrol the South China Sea. Completion of the vessels is scheduled for 2015.473

20th January 2009: China releases the bi-annual white paper on China’s National Defense in 2008, where a new, but carefully drafted sentence states that the navy strives to “.. gradually develop its capabilities of conducting cooperation in distant waters (author’s emphasis) and countering non-traditional security threats...”474

4th March 2009: The Chinese government announces that the 2009 defense budget will be at 480.8bn RMB ($70bn), a 14.9% increase from 2008, and a continuation of the trend of the defense budgets from the previous decade.475 It is unclear how large a portion of the budget is allocated to the PLA Navy.

9th March 2009: An internal debate in China started when Major General Zhang Deshun stated in China Daily that “even when the navy has its aircraft carriers one day, our national defense strategy will remain purely defensive”476 He carried on to say that China’s decision to send destroyers to the piracy mission was hyped by some media as a coming “China threat”. “In fact, China is doing exactly

what other countries are doing; sending ships there to protect our national interests.” Major General Wang Dengping said on Chinese national radio that “I hope more Chinese learn what the oceans mean for China and more foreigners understand China’s intentions.” Chen Mingyi, a member of the Chinese People’s Political Consultative Conference (CPPCC), the country top political advisory body, said that “the navy should move from coastal waters to the oceans and shoulder the task of safeguarding its territory, and development of the national economy and overseas interest.” Other delegates at the CPPCC argued that China should expand investments in its oceanic industry and make it a growth field for the Chinese economy. Offshore resources in the South China Sea should be explored and developed, and China should formulate a national oceanic development strategy.

11th March 2009: PLAN Deputy Political Commissar Wu Huayang said that “China already possesses the economic and technological power required for building an aircraft carrier after many years of development”, and he also said that “building an aircraft carrier is the will of the people and is necessary for the development of our navy as well as being a symbol of China’s position in the world.” Vice Admiral and former commander of navy’s Donghai fleet said “he believed that China will build an aircraft carrier sooner or later.”

24th March 2009: During a meeting in Beijing, the Japanese Minister of Defense, Yasukazu Hamada, asked about the Chinese aircraft carriers, and the Chinese Minister of National Defense Liang Guanglie responded that “China will not remain the only major country without an aircraft carrier. China’s navy is currently rather weak, so we need to develop an aircraft carrier.”

16th April 2009: Wu Shengli, member of the CMC and commander of the PLA Navy, said that “The Central Committee of the CPC requests the PLA Navy to place the preparations for maritime military struggle on the top of the national security strategy and military strategy.” Wu Shengli is a member of the CMC, the highest military organization, chaired by President Hu Jintao, and what he said in this

477) Ibid.
478) Ibid.
482) Ibid.
483) Ibid.
statement is important. A statement of this nature, which refers to the Central Committee of the CPC, must have been approved at the Central Committee, which is why this statement is important. What we can interpret from it, is that the development of the PLAN has become a top national security strategy, which means that the development of the PLAN has been linked to China’s national security interests.

23\textsuperscript{rd} April 2009: The PLAN celebrates its 60\textsuperscript{th} anniversary with participation of foreign guests from 29 countries to inspect its ships. For the first time, China shows its Type 093 nuclear attack submarine. In December 2006, President Hu Jintao pledged that China would \textit{“build a strong and modern navy as the navy was of vital importance in defending state interests and safeguarding national sovereignty and security”}.\textsuperscript{486} At the 2009 PLAN anniversary, Hu Jintao followed up on this and said that the PLAN \textit{“should comprehensively push forward its modernization to constantly enhance its capability to carry out missions in the new century and new phase”}.\textsuperscript{487} He pledged that China’s armed forces would never be a threat to anyone, and that the PLA Navy would be more open and cooperative in the international maritime security cooperation in the future, and had the goal of building a ‘harmonious ocean’.\textsuperscript{488} The PLAN commander Wu Shengli at the same event said that \textit{“China is emerging as a global power and there is nothing wrong with China’s modernization of its navy and other armed forces. But more power means more responsibility and transparency. Otherwise you will lose confidence from others”}.\textsuperscript{489}

The pledge of improving transparency has clearly not been implemented yet. Four days later, on the 27\textsuperscript{th} April 2009, the aircraft carrier Varyag was moved to a dry dock\textsuperscript{490} without any official comments. It also happened without any major international upheaval, since the world was prepared for it. The Chinese information campaign had achieved its objective.

The flow of information that has been released since November 2008 has all come from people who are more or less under control of the CPC, with a wide variety of people and organizations being involved in the discussions. The policy of building a blue water navy is founded in the defense white paper, and is supported by increases in the defense budget. The development of a Chinese blue water navy is not only a CMC decision, but is also party and government policy, and they are conducting a

domestic information campaign to get popular support for the project. By synthesizing the messages we can identify China’s naval policy, which is to build a blue water navy that can operate outside the Chinese region for the purpose of “safeguarding China’s national interests”, which is the term President Hu Jintao used in 2004 as one of the new historic missions for the PLA. China is an emerging global power, and needs a strong navy with carrier groups at the core of its power projection capacity. It is a grand strategy, which is supported by diplomatic, informational, economic and military means, and it will change China’s profile from a continental power into also being a maritime power.

The PLA Navy of today is not a blue water navy, but rather a green water navy, which is capable of conducting operations up to about 200 miles from ashore, within reach of land based fighter support. This chapter will not discuss the green water navy and its current capabilities. Plenty of other literature about the Chinese navy has done that. A good book that deals with all aspects of the Chinese green water navy is Bernard D. Cole’s “The Great Wall at Sea: China’s Navy Enters the Twenty-First Century”. This chapter will instead analyze and discuss what the future Chinese blue water navy could look like, based on the navy as we know it today. This is a highly controversial topic, as many countries are concerned about China’s rising power, and a Chinese development of a blue water navy will only add fuel to these concerns. It is not the intention of this book to identify China as a future threat to any state. It is purely an assessment of what a Chinese blue water navy could look like, and where it may be deployed.

What Type of Blue Water Navy?
The PLA has not been very open about its plans, and it is not officially known what type of blue water navy China is contemplating building. We know that China has an ongoing aircraft carrier program, and we can study the maritime vessels that have been built in recent years, but apart from that, much is left to speculation as to what capabilities China’s future navy will have, where it will sail, and whether it will be permanently forward deployed? From the whitepaper on China’s national defense in 2008 we know that it is intended to operate in distant waters, and from Hu Jintao’s new historic missions we know that the PLA in the future is to provide a powerful strategic support for safeguarding national interests and play a role in safeguarding world peace.

491) Interpretation of “distant waters” from the whitepaper on “China’s National Defense in 2008”.
This book will not attempt to predict what type of blue water navy China will develop, but rather lay out some of the options there are for a blue water navy, and discuss some of the aspects that the PLA will have to consider with regards to determining the capabilities of the future navy. Based on the above, the book will compare the current navy’s capabilities and development trends, in order to examine how they match the various models.

The Capabilities of a Blue Water Navy

The term blue water navy is a colloquialism used to describe a maritime force capable of operating across the deep waters of open oceans. China does not have an officially declared strategy for the development of a blue water navy, and in terms of future capabilities, the only indications we have are that the navy should be able to safeguard sea lines of communications (SLOC) and the more indeterminable safeguard its national interests.

For the purpose of discussing the options that are available to the Chinese in terms of capabilities of the navy, we may conceptually categorize a blue water navy into three categories: (1) A Sea Lines of Communication (SLOC) Navy, (2) a Military Operations Other Than War (MOOTW) navy, and (3) a Power Projection (PP) Navy.

- **A SLOC Navy** is a navy which is able to sail across the deep waters and patrol sea lines of communication to safeguard the country’s merchant fleet. The SLOC navy is capable of protecting itself from air, surface and subsurface threats, and it is able to use force against other maritime assets. It has a robust Anti-Air Warfare (AAW), Antisurface Warfare (ASuW), and Anti-Submarine Warfare (ASW) capability. It has no amphibious capabilities, and has very limited capabilities to project power ashore. An example of such a navy is the Russian navy, whose primary mission is to provide nuclear deterrence by means of the nuclear submarine fleet, and to defend the sea-lanes approaching the Russian coast. For the task of defending the sea-lanes, Russia has one aircraft carrier and a group of support ships, with which it can patrol the seas.

- **A MOOTW Navy** is a navy which has the same capabilities for patrolling the seas as a SLOC navy. In addition, it has a limited amphibious capability and a limited capability to project power ashore by the use

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496) Anti-Surface Warfare (ASuW), U.S. Navy terminology for operations against enemy surface ships. Source: Ibid.

497) Anti-Submarine Warfare (ASW), U.S. Navy terminology for operations against enemy submarines. Source: Ibid.

of offensive aircraft, land attack missiles, marine amphibious forces and Special Forces. An example of
such a navy is the British navy with two medium sized aircraft carriers and two landing ship dock am-
phibious assault ships, multirole fighters and land attack cruise missiles. However, the British navy only
has a limited capability, and is not capable of fighting a large scale war on its own. The 1982 Falklands
war is probably the maximum size of operation such a force could conduct on its own. The force is very
capable of conducting anti-piracy operations, anti-terrorism operations, non-combatant evacuation
operations (NEO), and wage smaller wars, such as the Falklands War.

- **A PP Navy** is a navy which has sufficient military force to conduct a large PP operation both at sea and
  ashore. An example of such a navy is the US Navy with 10 Carrier Strike Groups,\footnote{See US Navy website (http://navy.mil/navydata/ships/carriers/powerhouse/cvbg.asp).} with large aircraft
carriers and amphibious Expeditionary Strike Groups\footnote{See US Navy website (http://navy.mil/navydata/navy_legacy_hr.asp?id=147).} supported by the US Marine Corps’ three
Marine Expeditionary Forces. The US Navy is capable of operating as a single service, but more impor-
tantly, it is often supported by expeditionary forces from the U.S. Air Force, U.S. Army, National Guard
and Reserve forces operating in joint operations, which makes the joint force capable of conducting a
large scale offensive operation both at sea and ashore. It has a comprehensive Joint Command, Con-
trol, Communication, Computers and Intelligence (C4I) system with global reach, supported by a global
satellite network providing communication and intelligence information.

<table>
<thead>
<tr>
<th></th>
<th>AAW</th>
<th>ASuW</th>
<th>ASW</th>
<th>Amphibious Capability</th>
<th>Land Attack Capability</th>
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<tr>
<td>SLOC Navy</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>MOOTW Navy</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Limited</td>
<td>Limited</td>
</tr>
<tr>
<td>PP Navy</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes\footnote{In a large scale power projection operation the US Marine Corps is often supported by U.S. Army once operations are established ashore.}</td>
<td>Yes\footnote{In a large scale power projection operation with land attack operations, the U.S. Navy is often supported by U.S. Air Force to enhance the capabilities.}</td>
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*Table 1. The Three Categories of a Blue Water Navy*

In principle, these are the three options China has for the development of its blue navy. The three
categories can also be seen as three incremental development stages starting with a SLOC navy,
then by adding amphibious and land attack capabilities the navy can grow to a MOOTW navy and fi-
nally, by increasing the navy’s capabilities and adding expeditionary land based air power and ground
forces, it can become a PP navy. When it comes to the various types of operations the above three
categories of navies can do, then we have the following possibilities:

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\footnote{See US Navy website (http://navy.mil/navydata/ships/carriers/powerhouse/cvbg.asp).}
\footnote{See US Navy website (http://navy.mil/navydata/navy_legacy_hr.asp?id=147).}
\footnote{In a large scale power projection operation the US Marine Corps is often supported by U.S. Army once operations are established ashore.}
\footnote{In a large scale power projection operation with land attack operations, the U.S. Navy is often supported by U.S. Air Force to enhance the capabilities.}
All three types of navies have the capability to conduct operations at sea and to safeguard SLOCs. However, what is more important, and what the world will study carefully, is to what level the future Chinese navy will have the capability to project power ashore. This all depends on what the Chinese leadership determines is required for safeguarding China’s national interests. Is China capable of safeguarding its national interests only at sea, or will she need the capability to project power ashore to safeguard her national interests? National interests have economical, security, political and cultural dimensions, and crucial aspects of these for China are unequivocally linked to the land domain, such as:

- Foreign nationals of interest to China living ashore,
- Chinese nationals in China or living abroad,
- global shore-bound industrial centers,
- the majority of natural resources, minerals, and oil exploited by man are all shore-bound,
- global financial centers,
- political capitals and decision centers,
- the military forces that protect the political and economic vital areas are ashore,
- land-based military bases supporting maritime, land and air forces,
- the states with which China establishes friendly ties,
- states with which China may have problems are ashore, and
- terrorists live ashore (pirates operating out of Somalia live ashore as well).

The maritime domain is also a crucial part of a global system of interdependent networks of trade, finance, information, law, people and governance. The maritime domain:

- Connects the nations of the world, even those countries that are land locked,
- facilitates 90% of the world’s trade, which is transported by sea,
- is a global link between natural resources – industry and consumers,

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- holds vast amounts of national resources in terms of oil and gas,
- is an important source of food for states with access to the sea,
- is a domain of international political disputes, and
- is an important historical and cultural venue for international exchange of culture.

The maritime domain contains some of the world’s natural resources, and is therefore a domain for international political disputes about the rights to exploit these. However, it is the maritime domain’s role as a link in the global system of interdependent networks that makes it important. However, geo-strategically speaking, in times of crisis, rather than the maritime domain being the fundamental domain for human beings, it is more a potential vulnerability for the players in the land domain. The land domain, on the other hand, is more than a vulnerability; it is the key domain. The land domain has almost all of the world’s minerals, and it hosts the global industry. The world’s consumers live in the land domain, and it hosts strategically important political centers where key strategic decisions are made. This is why it is important for a Chinese blue water navy to have the ability to affect the situation ashore, as it will greatly improve the navy’s ability to safeguard China’s national interests.

It is in this context that the development of the future Chinese blue water navy should be assessed. It is beyond this author to speculate on the level the Chinese blue water navy will develop to. It may become a SLOC navy with the ability to defend Chinese national interests in relations to sea-lines, like the Russian Navy, or it may become a MOOTW navy, like the British Navy, with the ability to affect situations ashore to some degree. Or, over a period of 3 to 4 decades, it could develop into a PP Navy, which will have security political consequences way beyond the Chinese region.

How will the Navy Deploy?

A very important aspect of the future Chinese blue water navy is how it will deploy. There are in principle three ways the blue water navy can deploy out of the Chinese region across the deep seas.

- **Out-and-back missions.** Shorter deployments (i.e. 4-6 months) departing from China to the mission area, and after the end of the mission it returns to China. Such deployments only require a limited logistical footprint in the operations area. Supplies can be flown to the area and picked up in a nearby harbor. Large maintenance and overhaul is not required. Such missions are typical port calls or detachments of smaller task groups to minor operations. Out-and-back missions are used in small scale operations, where the problems that need to be addressed are of a limited and temporary nature. This type of mission involves no - or very limited - use of force. The ability of Out-and-back missions to affect situations in the mission area and achieve long lasting effects is limited, since the fleet returns after a

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504) “Out-and-back missions” is not an official term. It has been coined for this book to describe missions of shorter deployment as described.
short stay in the area. The PLAN participation with two destroyers and a supply ship in the anti-piracy operation off the coast of Somalia could be seen as an out-and-back mission. It is a small scale operation with only three ships, and the vessels have been rotated in and out of theater. However, if the mission continues, it could develop into a temporary deployment.

- **Temporary deployments.** Deployments of a longer duration (1-2 years) to a mission area demanding an expanded, but still limited, temporary logistical footprint in the mission area. Large two-year maintenance is conducted at home, and individual ships are rotated in and out of the mission area. Temporary deployments usually only involve the navy and not other services. A temporary logistical hub is required in the mission area, as well as access to harbor facilities for emergency repairs. Temporary deployments are used for specific missions that require a maritime deployment. Temporary deployments of robust forces can obtain lasting political results even in medium sized operations, as it was seen during the Falklands War. The military balance of the region to which the task group is deployed will be affected temporarily. However, if the task group returns after end of mission, it is unlikely that it will have lasting effects on the regional military balance.

- **Permanent deployments to a forward area.** Deployments to a forward area with extensive requirements for maintenance in the forward area. Such deployments require permanent logistical support facilities, ship maintenance facilities, an air transport facility and a willing host nation. The permanent deployment of the US Pacific Fleet in Japan is an example of a permanent forward area. The advantage of such a deployment is that the logistical support is much more extensive, and will thus enable the force to sustain operations for an extended period of time without the need for transit time back to China. The host nation may also provide support to land based air power as well as army deployments, should that be required. The permanent presence of such a force in the mission area will contribute to safeguarding national interests, as the military presence in the area becomes both an ambassador for the sending nation, but also, more importantly, a security guarantee to the host nation and other friendly nations in the region. US Navy doctrine describes permanent forward presence in this way:

  “Overseas presence promotes national influence and access to global areas, builds regional coalitions and collective security, furthers stability, deters aggression, and provides initial crisis-response capability. Naval presence is more than the day-to-day operation of our forces in a forward region. Those operations have crucial significance, but governments, like individuals, react to change. The sorties of powerful forces such as the repositioning of a highly visible carrier battle group or an amphibious ready group sends a powerful signal to the political leaders of nations and regimes who might seek to press their temporary advantage against U.S. interests.”

A permanent deployment of the navy to another region in the world is without comparison the most politically influential way to deploy the navy. It will affect the regional military balance and be an important part of the regional security considerations. In the whitepaper on “China’s National Defense

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505) “Temporary deployments” is not an official term. It has been coined for this book to describe missions of shorter deployment as described.

in 2008”, the Chinese write that the “Struggles for strategic resources, strategic locations (authors emphasis) and strategic dominance have intensified.”\(^{507}\) It is not specified further what they mean by strategic locations, but it could also mean permanent naval deployment locations. The U.S. and the UK have had overseas bases for decades, and more recently France has obtained rights to permanent deployment to Abu Dhabi in the United Arab Emirates,\(^{508}\) and Russia is negotiating with Syria for a naval base in Tartous harbor.\(^{509}\) This is testimony to the fact that there is a growing interest in obtaining permanent access to ports in critical regions around the world.

All types of blue water navies (SLOC, MOOTW and PP) can deploy in all three ways (Out-and-back, temporarily and permanently). Out-and-back missions and temporary deployments are mission types that politically are the easiest to deal with in peacetime because of their temporary nature, and due to the fact that they do not alter the regional military balance permanently. A permanent deployment of a blue navy fleet to another region will alter the regional military balance, and may cause a confrontational situation as other nations in the region may interpret the deployment as being directed against them. The PLAN will have to consider its options carefully before deciding what type of deployment it will aim for. The PLAN’s only deployment abroad is the anti-piracy operation off the coast of Somalia, and China has announced that this is not a short term mission.\(^{510}\) However, the mission is limited in scope and size, and does not change the regional balance.

**Where could the PLAN Deploy to?**

A carrier fleet requires a large expanse of water to operate in to conduct air operations from the carrier, and to be able to ensure the safety of the carrier group. It is therefore very unlikely that China will operate with carrier groups inside her territorial waters or even the South China Sea. The future deployment of a Chinese blue water navy will depend on the international interests that are at stake, and this book will not attempt to predict where or why it will be deployed. We know that China is an emerging global power, and therefore this book will take a look at the global map of the seas and determine the options that are available to the Chinese for the deployment of a blue water navy. As

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a general rule, the further away the location is from mainland China, and the larger the operation is, the more inclined the PLAN will become to consider establishing expanded logistical support facilities or permanent deployment, simply because of the logistical burden it is to support a large fleet a long way from home. There are also a number of maritime choke-points, like the Strait of Malacca outside Malaysia, or the Tsugaru Strait in Japan, through which both the navy and its logistical support will have to sail. This could be very critical for the Chinese in a crisis, and that would be an argument for the establishment of a permanent forward location.

![Figure 1 PLAN blue water navy deployment options](image)

**Figure 1 PLAN blue water navy deployment options**

The figure above shows that there are three major oceans to which a Chinese blue water fleet might deploy, apart from the East and South China Sea; The Pacific Ocean, the Indian Ocean, and the South Atlantic Ocean. The navy might in principle deploy to the North Atlantic Ocean as well. However, this is deemed less likely, considering that China does not import minerals, resources or energy from that region.

- **Indian Ocean.** The Indian Ocean is a very important sea to the Chinese and to the rest of the world. It is one of the main sea lanes for transport of commerce and energy between Asia and Europe. For China, the SLOCs between the East African coast and China are very important due to the vast investments China has made in the provision of oil and minerals in many African countries. The waters give main access to the largest oil reserves in the world, located in the Middle East, but are haunted by pirates who operate out of Africa. The one major problem China has with the Indian Ocean is that, unless it takes the long route south of Australia, its carrier task group will have to pass one of three
straits to enter the Indian Ocean. The Strait of Malacca is the most commonly used because it is on the shortest route between Africa, the Middle East and Asia, and because it allows passage of the largest merchant ships. The Strait of Malacca is about 800 km long and between 50 to 320 km wide (2.5 km at its narrowest point) and has minimum channel depth of 23 meters. It is the longest strait used for international navigation. For smaller ships passage it is possible to pass through the Sunda Strait, located between Sumatra and Java and the Lombok Strait further to the southeast. However, the issue of vulnerability is the same for all three straits, because they can be to cut off in case of a crisis. E.g. in 1996, Indonesia announced that it intended to restrict military and commercial shipping to three lanes running through the archipelago (the Sunda Strait between Sumatra and Java, the Lombok Strait between the islands of Bali and Lombok and through the Moluccan Sea). Access through the critical Strait of Malacca was to be restricted, which would be a great restriction on international military and merchant shipping. To mitigate this vulnerability, it would therefore be logical for China to make agreements with a state that has a large harbor facing the Indian Ocean, to ensure that the carrier task group is not logistically cut off from its supplies and maintenance facilities. There are many speculations as to where this could be, and in the U.S. the theory of “String of Pearls” has been voiced. This is a term that is being used for potential harbors, which Chinese warships could enter when sailing in the Indian Ocean. Harbors in the Indian Ocean that have been termed String of Pearls are Gwadar in Pakistan, Chittagong in Bangladesh and Sittwe in Myanmar. These are all harbors that are being expanded to deep sea harbors with Chinese investments. Another option for a potential forward location is Port Louis on the island of Mauritius, which is located in the middle of the Indian Ocean. China has invested $250 million to modernize the air port in Mauritius, and $750 million to develop a special economic zone. China has also provided Sri Lanka with a $360 million credit facility for a harbor project at Hambantota, which aims to expand the harbor to a deep sea harbor. Many believe that this will be a future Pearl for China. The Chinese are denying the “String of Pearls” theory, saying it has no merit. In this author’s opinion, there is no doubt that a Chinese carrier fleet, for logistical security reasons, will have to be able to enter a port in the Indian Ocean when operating there. It is far too early to say whether China will seek a permanent forward location in the Indian Ocean, or just obtain temporary access. Chinese military experts are discussing the option of establishing a forward location in East Africa in support of the anti-piracy operation that is currently taking place. In

514) Ibid.
May 2009, a Chinese military expert said to the Chinese internet news agency China Review News that “China should consider a land based support center in East Africa.”\(^\text{517}\) The expert refers to the fact that Western and Japanese participating in the anti-piracy operation are staging logistical centers in Djibouti in North East Africa for supporting their participation in the anti-piracy operation. The expert suggests that China should also establish a land-based support center in a harbor in Northeast Africa, which will also contribute to maintaining good diplomatic relations with the countries in the region.

- **Pacific Ocean.** The Pacific Ocean is important for two main reasons. First of all it is the main route for trade between China, Japan, ASEAN, Australia, New Zealand, Canada, the U.S. and the South American countries on the western coast. The second reason that the Pacific Ocean is important for China, is that it is the main transit route for the US Navy to Asia. In case of a conflict between the US and China, the Pacific Ocean could become a main battle ground for the two navies. The US forward installations at Pearl Harbor, Guam, on the Japanese Islands and in South Korea are crucial to US strategic reach to Asia, and China knows that. A Chinese Pacific Fleet would be an important military force, which the US cannot ignore. The Pacific Ocean is extremely large, and if deployed to the coast of South America, a Chinese carrier group would be very vulnerable without access to a logistical facility. Hence, seen from a geographical point of view, potential areas where a Chinese Pacific fleet could seek logistical support would be on an island in the Pacific, or at the west coast of South America. The PLA is showing an interest in countries with a Pacific coastline as a Type 051C Destroyer visited French Polynesia, Chile, Peru and Ecuador.\(^\text{518}\) China has vast economic interests in South America and is seeking to enhance its relations with South American countries along the Pacific coastline.\(^\text{519}\) Specifically China has interests in food imports and natural resources from Chile\(^\text{520}\), Peru,\(^\text{521}\) and Argentina.\(^\text{522}\)

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\(^{518}\) In October 2009 a Type 051C Guided Missile Destroyer (Shijiazhuang) visited Chile, Peru, Ecuador and French Polynesia. PLA Daily, “Two Chinese warships leave to visit four countriers”, 20 October 2009, (http://eng.chinamil.com.cn/news-channels/china-military-news/2009-10/20/content_4064374.htm).


**South Atlantic Ocean.** China has good relations with many countries in South America and on the African west coast, and is entering into many trade agreements with countries from these two areas. It is possible that the Chinese in the future will consider a deployment of a carrier fleet to the South Atlantic Ocean, in order to secure China’s trade routes, and also as a potential future security guarantor. The South Atlantic Ocean is on the opposite side of the globe from China, and it would be necessary with access to a harbor in case of a temporary or permanent forward deployment to this region. From a geographical point of view, a deep sea harbor on the west coast of Africa or east coast of South America could become a forward location for a Chinese South Atlantic Fleet.

It is far too early to say where the future Chinese carrier fleet(s) will be deployed. However, it is unlikely that China will position several carrier fleets in harbors along the coast of the Chinese mainland. If that were the case, it would be very difficult to support the fleets from home during long range deployments, and they would become vulnerable to being cut off at the strategic chokepoints when deployed. Geopolitically, many things can happen on the global scene over the next 20-30 years before China is potentially in a position where she would consider a permanent forward deployment. In the meantime, China’s political clout will rise significantly, as her economic and military power rises. in the future, this will enable China to extend economic and military security to countries that choose to offer themselves as hosts to a Chinese fleet. It is likely that in the following couple of decades, we will see China forge political, economic and military relations with coastal states that could become hosts for a Chinese carrier group. Such a location should preferably be a relative safe haven, and not be too close to where a crisis could occur.

**The Aircraft Carrier**

The aircraft carrier is the crucial part of carrier group, as it carries the most potent weapon of the fleet – fighter aircraft. There are many types of carriers in the world, and they have vastly different capabilities depending on how many aircraft they carry, and whether these are air defense fighters only, or multirole fighters. If they only do air defense missions and/or anti-ship missions, as is the case with the Russian carrier Kuznetsov, then the carrier fleet will only become a SLOC navy, whereas if the fighters can operate in a multirole capacity, also flying offensive missions, then the carrier group will have the capability to become a MOOTW or a PP carrier. It is therefore very interesting what type of carrier the Chinese will build, and what type of carrier aircraft they will acquire.

**Varyag as a Training Carrier**

Considering that the renovation of Varyag started on the 27th April 2009, and that it is unlikely that China will build a carrier before it is finished, the Varyag is therefore likely to become China’s first aircraft carrier. China bought the Russian carrier Varyag of the Kuznetsov class from the Ukraine in
1998. The vessel, which was decommissioned in 1992 after the break-up of the Soviet Union, was only 70% complete, and was bought without an engine, rudder and armaments. Its sister ship, the Russian Kuznetsov (65,000 tons maximum displacement), is operational today in the Russian navy, operating 20 fighters (Su-33 and Su-25) and 22 helicopters. The Kuznetsov has no catapult to assist the fighters into the air, but uses a ski jump. The ski jump is less effective than a catapult, which is why there is a limit to the amount of fuel and offensive weapons the aircraft can carry.

In 2005, the Varyag was in dry dock for the first time to be painted in the classic gray paint scheme of the Chinese Navy. After another four years of waiting, the Varyag was then, on the 27th April 2009, sailed into dry dock for the second time. This time progressive work has started, which indicates that she will be made ready for carrier operations. It is possible that the Varyag could be used operationally; however, experts consider it unlikely, since it will be very difficult and expensive to install a complete defensive weapons suite in an already built carrier, on top of the aviation suite that is required for aircraft operations. It is therefore more likely that the Varyag will be used as a platform to train the first Chinese crew in the very complex art of flying off an aircraft carrier. Establishing this capability requires extensive preparations in logistical support of the ship, its crew and flying operations. Administration and maintenance procedures have to be set up for the ship and its aircraft, and technical and tactical procedures have to be established to operate effectively, and to ensure safety in general, and flying safety in particular. To speed up the process, China may acquire help from abroad. China has established close relations with Brazil, who operates an aircraft carrier, and there are indications that China may acquire assistance from them. China was also in negotiations with the Ukraine in October 2006, concerning the training of aircraft carrier pilots at the Ukrainian Research Test and Flying Training Center in Nitka, Ukraine, and since then, Chinese engineers, pilots and naval technical experts have made frequent visits to Nitka. In January 2009, the Ukrainian Defense Minister Yuriy Yekhanurov was quoted as saying that “I think that time has come

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for the three of us to negotiate and agree upon joint projects. I am talking about military-transport aircraft, training naval aviation officers (editors emphasis), and ship building”.\(^530\) This is an indication that China will have the possibility of training its pilots in the Nitka simulator. But even with this assistance from abroad, it is still going to take many years before China can routinely make sorties off an aircraft carrier in an operational context.

**What Type of Carrier will China Build?**

There are in general three types of carriers. On the first type, the fighter starts unassisted, powered by its own engines, and lands vertically, like on the future British aircraft carrier of the Queen Elizabeth Class. Flight operations from this type of carrier requires the aircraft to be able to land vertically, like the future Joint Strike Fighter Short Take Off and Vertical Landing (STOVL) version.\(^531\) China does not have this type of aircraft, and considering that this technology is very complicated, it is unlikely that China will acquire this sort of carrier.

The second type of carrier is a Short Take Off But Arrested Recovery (STOBAR) carrier, on which the aircraft also starts unassisted, powered by its own engines. However, it lands conventionally, using an arresting cable to stop it. The Russian carrier of the Kuznetsov class uses this technique.

The last type of carrier is the Catapult Assisted Take Off But Arrested Recovery (CATOBAR) carrier, where the aircraft is launched into the air by a catapult, and lands conventionally, using an arrester cable, as on the US carrier of the Nimitz class or the French Charles de Gaulle class. The main advantage of a catapult-assisted start, is that the aircraft take-off weight can be much greater than with unassisted starts, which enables it to carry a larger weapon load. This makes the catapult very important, because this is what enables the carrier to conduct land attack mission and thereby become a MOOTW or a PP carrier.

The catapult is therefore crucial in terms of the future capability of the Chinese blue water navy. The catapult on a U.S. carrier today is powered by steam, is about 300 feet long, and it consists of a large piston under deck. It is able to accelerate a 60,000 pound aircraft from 0 to 150 mph in less than two seconds.\(^534\) An F-18E/F weighs about 46,000 pounds with fuel, which enables it to carry

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533 Ibid.
around 14,000 pounds of targeting pods and defensive and offensive weapons, when launched from a carrier. With a steam catapult, a U.S. carrier can launch a new aircraft every 20 seconds. A US carrier is capable of sustaining 125 sorties per day, of which 94 are tactical fighter sorties. During surge, it can launch 200 sorties per day, of which 150 are tactical fighter sorties. To sustain 24 hours operations over a longer time requires two aircraft carriers. The U.S. Navy is currently developing an Electromagnetic Aircraft Launch System (EMALS), which uses electromagnetic force to launch the aircraft. The system is to be installed on the new aircraft carrier Gerald R. Ford.

It would be very attractive for the Chinese to have a CATOBAR carrier, and this author believes that China will seek to acquire a CATOBAR carrier; however, a catapult is technologically very complicated, and it may still take some time to develop it. It is a technology that it will be difficult to purchase abroad, since all nations that can build a catapult also maintain a weapons embargo on China. However, China is about to enter an agreement about naval cooperation with Brazil, who operates a CATOBAR carrier, the Sao Paolo, and there are indications that Brazil may assist China in training its pilots in carrier operations. It is noteworthy that China is seeking to train its pilots on a CATOBAR carrier, and in doing so, Chinese engineers may also get an opportunity to study the catapult onboard the Sao Paolo in detail. When it comes to the catapult, China has been seeking alternative ways to obtain knowledge of how to build it. In 2005, the Chinese-born engineer Chi Mak, who worked on US Navy quiet-drive propulsion technology, was arrested in the USA for espionage against the US defense industry. Chi Mak had received written instructions concerning which military technologies he was to seek knowledge. They included “electromagnetic launch systems” for carriers, and “aircraft carrier electronic systems.” Whether China ever received the information was never made known to the public. On 8 June 2007, a Tsinghua University webpage mentioned that a chief design engineer, Mr. Ma Weiming, was leading a Chinese Electromagnetic Launch System project, thus confirming that China is interested in developing a catapult equipped carrier, and is researching the latest technologies. It is a big question whether China’s first home built barrier will have a catapult, but considering that China is putting considerable effort into acquiring the technology, it is likely that China eventually will do so, and thereby be able to establish a MOOTW or PP carrier capability.

When it comes to landing aircraft on the carrier, sources in the Russian navy say that China

539) Tsinghua University, 8 June 2007, (http://join-tsinghua.edu.cn/bkzsw/detail.jsp?seq=2960&boardid=1301).
has bought four carrier landing systems, capable of handling heavy fighters like the SU33.\textsuperscript{540} It is suggested that one system is to be studied and copied, while another is to be mounted on the Varyag. The last two landing systems are to be used on two carriers, which China has in the past denied plans for.

Many sources indicate that China’s first homebuilt carrier will be around 60,000 tons, approximately the size of Varyag, and equivalent to the size of the British future aircraft carrier. A carrier of this size will be able to carry about half the load of aircraft and helicopters that a US Nimitz Class carrier (97,000 tons) can carry.\textsuperscript{541} To match the US capabilities, the Chinese would therefore either need twice as many carriers as the US, or to increase the size to around 95,000 tons. The South Korean newspaper \textit{The Hankyoreh} quotes unnamed Chinese sources close to the Chinese military as saying that China is considering the development of a carrier under project 085, a 93,000 tons Nimitz-sized nuclear carrier, according to a Chinese Communist Party dossier.\textsuperscript{542} The source also indicates that China has a project 089, a 48,000-tons conventionally propelled carrier, which, fully loaded, will have a displacement of 64,000 tons, approximately equivalent to the Varyag. This last piece of information has subsequently been supported further. In accordance with the dossier, the 93,000-tons nuclear carrier is to be finished by 2020, and is to be built at the China State Shipbuilding Corporation’s Jiangnan Shipyard. The size of this carrier is similar to the unfinished Russian carrier Ulyanovsk, and China may have bought the design sketches of this ship from Russia. It may be true that China is considering a carrier of this size; however, this author considers it unlikely that China will attempt to build a 93,000-tons carrier until they have obtained significant experience from building and operating a smaller, medium sized carrier.

International experts on the PLA and the Chinese shipping industry have expressed doubts as to whether the Chinese will be able to build their own aircraft carrier, but the Chinese seem confident, and Chinese shipping sources have said that they are ready to build a carrier in Shanghai in 2009, with expected completion in 2015.\textsuperscript{543} It is likely that the carrier will be built in the new shipyard at Changxing Island outside Shanghai. The Changxing shipyard has four large dry docks, of which the largest is 580m in length and 120m in width, enough to build a 60,000-tons carrier.\textsuperscript{544} The following chapter 12 on the “Military-Industrial Complex, Arms Export and Import” will discuss the current de-

\textsuperscript{543) Kenji Minemura, “China to start construction of 1st aircraft carrier next year”, The Asahi Shimbun, 31 December 2008.}
development trends of the Chinese shipping industry, and what challenges building an aircraft carrier will pose to China.

**PLA Navy Air Force**
The PLA Navy Air Force (PLANAF) operates 290 combat aircraft, helicopters, transport aircraft, Airborne Early Warning (AEW), Maritime Patrol Aircraft (MPA) and Electronic Intelligence (ELINT) aircraft. Many of the fighters are of an older generation, and the PLANAF has been considered to be the “poor cousin” of the PLAAF. Several of the older aircraft have been updated so that they are able to carry modern anti-ship weapons, which makes them useful in the battle for sea control in a Taiwan scenario. However, all of them are land based, and if they were to support a blue water operation, they would have to be deployed to an air base within reach of the navy task group. The PLANAF also operates a number of H-6D bomber aircraft that have been equipped to carry anti-ship missiles.

**PLANAF Combat Aircraft**
The PLANAF operates the following combat aircraft, none of which are designed for carrier operations:

<table>
<thead>
<tr>
<th>Designation</th>
<th>Role</th>
<th>Quantity</th>
<th>Manufacturer, Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>4th Generation</td>
<td>Carrier aircraft</td>
<td>-</td>
<td>?</td>
</tr>
<tr>
<td>3rd Generation</td>
<td>Multirole</td>
<td>24</td>
<td>KnAAPO, Russia</td>
</tr>
<tr>
<td>2,5 Generation</td>
<td>Fighter-bomber</td>
<td>30</td>
<td>Xi’an, China</td>
</tr>
<tr>
<td></td>
<td>Fighter-bomber</td>
<td>54</td>
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</tr>
<tr>
<td></td>
<td>Air Defense</td>
<td>20</td>
<td>Shenyang, China</td>
</tr>
<tr>
<td>2nd Generation</td>
<td>Air Defense</td>
<td>70</td>
<td>Shenyang, China</td>
</tr>
<tr>
<td></td>
<td>Air Defense</td>
<td>36</td>
<td>Chengdu, China</td>
</tr>
<tr>
<td>1st Generation</td>
<td>Attack</td>
<td>30</td>
<td>Nanchang, China</td>
</tr>
<tr>
<td></td>
<td>Long range bomber</td>
<td>1</td>
<td>Xi’an, China</td>
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<tr>
<td></td>
<td>Long range bomber</td>
<td>30</td>
<td>Xian, China</td>
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</table>

*Table 3 PLANAF combat aircraft inventory.*
*Source: Jane’s Defence and Military Balance 2009*
Su-30MK2 is an improved version of the Su-30MKK flown by the PLAAF. The PLANAF acquired the Su-30MK2 in 2004. The Su-30MK2 is armed with advanced R-73 Short Range Air to Air Missiles (SRAAM), and R-77 Active Homing Medium Range Air-to-Air Missiles (MRAAM), with Beyond Visual Range (BVR) capability. It can carry laser and TV guided precision bombs and Anti-Radiation Missiles. The Su-30MK2 has an improved precision attack capability, and is in its maritime role able to launch the advanced Kh-31 (NATO Codename Kh-17A Krypton-A) long range supersonic anti-ship missile. It has a new Command, Control, Communications, Computers, Intelligence, Surveillance, Target Acquisition and Reconnaissance (C4ISTAR) role, where it can be used as a mini-airborne command post to direct up to 16 of the same type of aircraft via data link to engage the enemy aircraft. The aircraft has a combat range of 1500 km, and is able to air-to-air refuel from the IL-78, an aircraft which the PLAAF is attempting to acquire. The PLAN Su-30MK2 primarily trains its maritime anti-ship role. However, the aircraft is likely also able to conduct land attack roles similar to the PLAAF Su-30MKK aircraft. The Su-30MK2 has an impressive combat range, but it is not able to operate from an aircraft carrier in a blue water navy operation. It will only be able to support the naval task group flying from air bases ashore.

JH-7/A is a twin engine, two-seated fighter bomber, which first flew in the late 1980's. In the 1990's, it went through a modernization program which essentially turned it into a new fighter, now designated JH-7A. The JH-7A is an offensive fighter with all weather, day/night precision strike capabilities, but with no in flight refuelling capability, and with limited air-to-air capabilities, as it can only carry short range air-to-air missiles. It has a pulse-Doppler multi-functional fire-control radar with look down/shot down capabilities, INS/GPS navigation with a combat range of 1650 km, two large multi-functional displays, head-up-display, fly-by-wire and automatic terrain-following capabilities. Target data is received through data link. JH-7A can carry two LS-6 laser guided bombs and a targeting pod. It can carry YJ-91 anti-radiation missiles and the KD-88 TV guided air-to-surface missile. The PLAN JH-7A is primarily for the anti-shipping role, capable of firing up to four YJ-81K anti-ship missiles with a maximum range of 50 km. With these capabilities, China has managed to turn the aging JH-7 into a capable weapons platform, which may pose a serious threat to an enemy navy.

547) The IL-78 was ordered in 2005, however due to contractual difficulties and production issues between Uzbekistan and Russia, the order has not been delivered. It is uncertain if and when the order will be fulfilled. Source:Sinodefence.com “IL-78 Tanker”, 17 January 2009, (http://www.sinodefence.com/airforce/airlift/il78.asp).
J-8 is an Air Defense fighter with limited capabilities, in spite of it being equipped with MRAAM. The J-8D, which had its public debut in 1999, has a non-retractable refuelling probe, which will enable the PLANAF to reach the remote islands in the South China Sea.\footnote{Sinodefense.com, "Jian-8II Interceptor fighter", 25 December 2008, (http://www.sinodefence.com/airforce/fighter/j8ii.asp).} The PLAAF flies the more advanced J-8F multirole fighter, which the PLANAF does not have.

J-7 is a Chinese copy of the famous Mig-21 Fishbed fighter. It is primarily an air defense fighter with a secondary offensive capability, though only with unguided bombs and rockets. In the air defense role, the J-7 is only able to use SRAAM, and is therefore not a very capable air defense fighter.\footnote{Sinodefence.com, "Jian-7 Interceptor fighter", 25 December 2008, (http://www.sinodefence.com/airforce/fighter/j7.asp).} Q-5C was originally designed as a close air support/ground attack aircraft, which first saw flight in the 1970’s. However, in a series of modernization programs, China has managed to improve the aircraft so that it is able to operate on the modern battlefield.\footnote{Sinodefence.com, "Q-5 Ground Attack Aircraft", 13 August 2008, (http://www.sinodefence.com/airforce/groundattack/q5.asp).} The PLAAF operates an updated version with precision weapons and GPS; however, the PLANAF is still flying an older version of the Q-5. Some of the Navy Q-5 have been modified with Doppler radar, making them capable of using the C-801 anti-ship missile.\footnote{MILAVIA, “Q-5/A-5 Fantan”, 27 May 2007, (http://www.milavia.net/aircraft/q-5/q-5.htm).}

H-6D is a long range bomber with a range of about 1800 km, which was first developed in 1981. It is designed for long range attack against land targets or enemy maritime vessels, such as aircraft carriers. For this purpose, the H-6D has two under-wing pylons able to carry two YJ-6 (C-601) anti-ship missiles. The aircraft is old, and for this reason the PLANAF in 2005 introduced the H-6M, which has four under-wing pylons with the ability to carry either four YJ-81 anti-ship missiles, or if necessary, four KD-88 Land Attack Cruise Missiles (LACM).\footnote{Sinodefence.com, “Hong-6 bomber”, 21 April 2008, (http://www.sinodefence.com/airforce/groundattack/h6.asp).} A long range bomber can be used in support of blue water naval operations; however, it requires an air base ashore to operate from.
Chapter 8

Air Defence Offensive Operations

<table>
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<tr>
<th></th>
<th>Within Visual RNG</th>
<th>Beyond Visual RNG</th>
<th>Un</th>
<th>Precision Guidance Munitions</th>
<th>Maritime Attack</th>
<th>In Flight Refuelling*</th>
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<td>X</td>
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<td><strong>Laser/TV</strong></td>
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<td><strong>SATNAV/Stand off</strong></td>
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<tr>
<td><strong>Anti Radiation</strong></td>
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<tr>
<td><strong>MSL</strong></td>
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</tbody>
</table>
| **Su-30 MK2**  | X                 | X                | X  | X                            | X              | X                     | IL-78
| **J-8**        | X                 |                  |    |                               |                |                       |
| **JH-7A**      | X                 |                  | X  | X                            | X              | No                    |
| **JH-7**       | X                 |                  |    |                               | X              | No                    |
| **J-7**        | X                 |                  |    |                               |                | No                    |
| **Q-5**        | X                 |                  |    |                               | X              | No                    |
| **H-6**        | X                 |                  |    |                               | X              | No                    |

*Table 4 PLANAF fighter combat capabilities. Source: Sinodefence.com*

**PLANAF Future Carrier Fighter**

The capabilities of the future Chinese carrier fighter are important, because they will govern whether the future blue water navy will have the capability to project power ashore using fighter aircraft, and whether the fighter will be able to provide close air support to an amphibious force. In the following, the options China has for the choice of a carrier fighter will be discussed.

Su-33. None of China’s existing aircraft in the PLANAF or the PLAAF can be used on an aircraft carrier. Considering that Varyag is being made ready for carrier operations, it must be assumed that the PLAN has more or less decided which aircraft are going to be used for training on the Varyag. In 2006, it was revealed that China had been in consultation with Russia about an agreement, according to which China would buy 2 Su-33 on trial. The deal had an option for a further delivery of 12 aircraft; 14 in total. They would be used for testing on the Varyag and a ground testing range. The agreement had an option to increase the delivery up to a total of 50 Su-33.555 However, the negotiating climate between Russia and China has been very strained, with Russia accusing China of violating Russian industrial property rights by copying the Russian Su-27SK fighter. Russia is therefore hesitant when it comes to selling advanced aircraft technology to China.556 In March 2009, Boris D.

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556) Sino-Russian negotiations on combat aircraft are described in detail in chapter 12 on the “Military-Industrial Complex and Arms Import and Export”.

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Bregman, the first deputy general director of Sukhoi, said that the talks with China are still at the consultation stage, and that no official negotiations had been entered into yet.\(^{557}\) It was indicated that with an order of only 14 aircraft, it would not be financially feasible to reconstruct the production line. The costs were too high for such a small order. In March 2009, it was announced that the consultations on the Su-33 had collapsed, though Russian sources said that the deal may be reviewed at a later stage.\(^{558}\) This last statement suggests that Russia could be willing to sell the Su-33, but is driving a hard bargain. China’s dilemma is that they do not seem to have any alternative to the Su-33. Modifying J-10 or J-11 to carrier operations is a complex and risky project, which will take longer time than it will take to get the Varyag ready for operations. Therefore, at this moment in time, it seems as if China’s only option to acquire a fighter for the Varyag is to buy the Su-33. Most international experts expect the Varyag to be used for training of carrier operations. However, if the Varyag was to be used operationally, then it would be best suited in the SLOC role, as the Su-33 would only be able to carry its defensive weapons load and a very limited offensive load, due to lack of a catapult system on the carrier.

China has some time to source a fighter for the new indigenously built aircraft carrier, which is expected to stand finished in 2015, however the choice of fighter depends on what type of carrier it is. If it is a STOBAR carrier, then the Su-33 can be used. However, if China is aiming for a CATOBAR carrier, then the Su-33 cannot be used without being modified. When an aircraft is accelerated by a catapult attached to the nose gear, the aircraft is stressed in a completely different way, compared to a conventional take off. However, a version of the first Su-33 was originally designed to be launched by a steam catapult, but in those days the Russians opted for a STOBAR carrier with no catapult, for which the Su-33 was then designed.\(^{559}\) This suggests that it may be possible for the Su-33 to be launched by catapult, though it will have to be modified first. Another problem with the Su-33, is that it was first operational in 1993 and it is now becoming an older aircraft. If China is to use the Su-33 on its future indigenous aircraft carrier, it will have to be modified to modern standards. Russian sources indicate that Sukhoi is willing to sell a modernized version, referred to as the Su-33K. It could be built to the standard of the Su-30MK2, which the PLANAF is already flying.\(^{560}\) If the aircraft were to operate in a true multirole it would also have to be modified to carry modern precision bombs and land attack missiles that are not in its inventory.\(^{561}\)

\(^{559}\) Sukhoi homepage, “Su-33 Historical Background”, downloaded 9 June 2009, (http://www.sukhoi.org/eng/planes/military/su33/history/).
J-10B. The alternative to acquiring a fighter for the indigenously built carrier is to convert one of their two domestically produced fighters, either the J-10B or the J-11B. The J-10B is the latest prototype of the J-10 family. It is a multirole fighter, but in its current version, the J-10B has neither the strength nor the engine power to operate from a carrier. Even though it is a multirole fighter, the J-10 is not able to employ anti-ship missiles,\footnote{Sinodefence.com, “Jian-10 Multirole Fighter Aircraft”, 21 March 2009, (http://www.sinodefence.com/airforce/fighter/j10.asp).} which would be required of a navy fighter. Anti-ship missiles would have to be added to the inventory of the J-10B. However, sources indicate that China is researching how to modify the aircraft, including improving its structure.\footnote{Hearing of Richard D. Fischer Jr, Vice President, International Assessment and Strategy Center, before the US China Economic and Security Review Commission, “PLA Leverage of Foreign Technology To Achieve Advanced Military Capabilities”, 16 March 2006.} In 2005, the J-10 was fitted with the more powerful Russian-built AL-31FN engine, and the Russians have offered to fit the engines with an all-aspect thrust vector control with an increased afterburning thrust. This would enhance the slow speed performance of the aircraft, but whether it will enable carrier take off and landing is unknown.\footnote{Sinodefence.com, “J-10 Multirole Fighter Aircraft”, 05 August 2008, (http://www.sinodefence.com/airforce/fighter/j10part2.asp).} China has not responded to the Russian offer. In 2007, China decided to modify the J-10 with the indigenously produced WS-10A engine, which has a performance similar to the Russian AL-31FN engine, though China has problems with the WS-10A engine and is still not using the engine.\footnote{China-Defense-Mashup.com, “China AVIC top head admits the poor quality of jet engine”, 2 April 2009, (http://www.china-defense-mashup.com/?p=3179).}

J-11B. Another option for the Chinese, is to modify their newest indigenously produced fighter, the J-11B, which is a multirole fighter similar to the J-10B, but with no anti-ship capabilities.\footnote{Sinodefence.com, “Jian-11 Multirole Fighter”, 20 February 2009, (http://www.sinodefence.com/airforce/fighters/j11.asp).} The J-11B is capable of carrying the Kh-31P anti-radiation missile, which is in the same family as the Kh-31A anti-ship missile.\footnote{Sinodefence.com, “YingJi-91 (Kh-31P) Anti-Radiation Missile”, 20 October 2008, (http://www.sinodefence.com/airforce/weapon/kh31.asp).} Hence, there is a possibility that Kh-31A anti-ship missile could be added to its inventory, however it may require modification of its fire control computer, radar and data-link to be able to process maritime data. The J-11B is a Chinese modified version of the SU-27 and therefore in the same family of fighters as the SU-33 which is a carrier fighter. However, the modification of the Su-27 into the Su-33 was very complicated. When the Su-33 was developed from the Su-27 model, it was modified with a highly mechanized wing fitted with a two-piece, single-slotted flap, an aileron and a bigger leading edge flap. To give a nose-down trim during landings it was modified with small forward wings, and to enable more aircraft to get onboard the carrier, it was modified with folding
wings. In addition, it has special software for carrier landings. Such a modification is very difficult and will take a long time to develop. However, the carrier for which it would be designed will not be ready until 2015. The advantage of the J-11 over the J-10 is that it has two engines, which is a desirable feature in maritime air operations, where emergency runways are few and scarce.

New Russian fighter. A final option for China is to join Russia in the development of a new carrier fighter. Russia has decided to hold a tender for a new carrier fighter, which is supposed to replace the Su-33 after 2016. There is no information regarding the desired capabilities on this future carrier fighter, and there is the possibility that Russia would prefer to cooperate with India rather than China, since Russia has sold an aircraft carrier with 28 Mig-29K to India, and Russia is already developing a 5th generation fighter in a joint project with India.

When comparing China’s options for sourcing a fighter for the future indigenous aircraft carrier, it looks as if China will have to buy the Su-33 as its first carrier fighter. Such a fighter is likely to be less sophisticated technologically than the newest Russian fighters, and if China is ever to catch up technologically with Russia and the west, the only option is to develop her own carrier fighters. If this is to be done within 5-10 years it will have to be a modification of an existing aircraft, such as the J-10B or J-11B. Of those two, the J-11B seems the more advantageous choice. This will be a long term project, and in the meantime China will have to settle for a less sophisticated Su-33K. If China chooses a CATOBAR carrier, these aircraft will be able to operate in an offensive role and be able to project power ashore.

**PLANAF Training and Doctrine**

In 2002 and again in 2004, the PLANAF introduced a rigorous training reform to improve the skills of the pilots. The training is designed to improve the pilot’s skills in a Taiwan scenario, and not particularly for blue water operations. The PLANAF pilots fly about 125 hours per year on 45 minute sorties, and each sortie will contain several training subjects. The pilots train both defensive and offensive operations, and they simulate that their home station gets destroyed, forcing a diversion

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to another base whilst airborne. Pilots train day and night, long distance low level missions (below 100 meters), over water and in poor weather conditions. Pilots are now required to make their own flight plans, and they are increasingly subjected to unknown airspace, unknown airfields and difficult conditions such as communications jamming. The PLANAF pilots also conduct trans-regional deployment exercises, which improve the pilot’s ability to fly in unknown airspace, and also develop an expeditionary logistic setup at regiment level. The PLANAF pilots also conduct joint training with the PLAAF in larger size exercises over water. In winter 2008, the PLAAF and the PLANAF conducted a joint air exercise over the South China Sea with participation of more than 100 aircraft. The exercise included fighters, bombers, tanker aircraft, jamming aircraft, SAM, and Anti-Aircraft Artillery (AAA) units. The PLANAF pilots thus benefit from the seemingly more sophisticated training that is being conducted in the PLAAF.

Joint training in the PLAN between fighters and maritime vessels, has been conducted by the PLAAF and the PLANAF fighters attacking the maritime vessels, which would defend themselves. When joint training is conducted in such a way, the pilots train offensive maritime attack, and the maritime surface units train AAW missions. This concept of joint training to some extent satisfies the training requirements that are associated with a Taiwan scenario; however, it is not sufficient to support blue water operations. During blue water operations, an important fighter mission is to defend the maritime task group, and in the western navies a maritime task group has fighter controllers onboard the ships directing the air defense fighters. In June 2009, the PLA Daily reported on a large PLAAF air exercise practising offensive operations against land and maritime targets. For the first time, it was reported that the PLAAF had positioned an air liaison officer and a fighter controller onboard a ship, to direct the air battle over the sea using the integrated maritime information based command and control platform. With this capability, the PLAN and the PLAAF will be able to develop joint tactical procedures for fighters and maritime vessels which are “on the same side”, which is a core function of a blue water navy.

It seems the PLANAF has improved the quality of the training of its pilots. They are flying more sophisticated missions, and there are higher demands put on the pilots in terms of them being able

to operate independently and make tactical decisions on their own. They are able to operate day and night and in poor weather conditions. This is what is required to become a pilot in a blue water navy, though to be able to fly proficiently off a carrier, the PLANAF will have to increase the amount of flying hours allocated to the pilots. A US Navy F-18 fighter pilot, who is flying off an aircraft carrier, is allocated 25 flying hours per month, or 300 flying hours per year, which is what the US Navy require a carrier pilot to fly to maintain a proficient operational status.578

PLANAF Helicopters

Helicopters are an important part of maritime operations, and the PLANAF operates a series of helicopters in the role of logistical transport, Search and Rescue (SAR), ASW and ASuW. PLAN destroyers, frigates and the Type-071 Landing ship dock can operate with helicopters; however, the PLANAF only has a limited number of helicopters. This is a hampering factor, since helicopters improve ASW operations significantly, as they are able to search for submarines much further away from the maritime task group. This is a significant weakness of the PLANAF, and it must be expected that the PLANAF will acquire more helicopters with ASW capabilities in the future. In October 2009 the Chinese news agency Xinhua reported, that China had purchased nine improved Ka-28 Helix ASW helicopters with all weather capability.579

<table>
<thead>
<tr>
<th>Designation</th>
<th>Role</th>
<th>Quantity</th>
<th>Manufacturer, Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z-9C</td>
<td>ASW, SAR, ASuW</td>
<td>25</td>
<td>Harbin, China</td>
</tr>
<tr>
<td>Ka-28PL Helix A</td>
<td>ASW, ASuW</td>
<td>6 (+9)</td>
<td>Kamov, Russia</td>
</tr>
<tr>
<td>Ka-28PS Helix-D</td>
<td>SAR</td>
<td>4</td>
<td>Kamov, Russia</td>
</tr>
<tr>
<td>Z-8 Super Frelon</td>
<td>Transport</td>
<td>20</td>
<td>Changhe, China</td>
</tr>
<tr>
<td>SH-5</td>
<td>ASW</td>
<td>4</td>
<td>Harbin, China</td>
</tr>
</tbody>
</table>

Table 5 PLANAF helicopters. Source: Jane’s Defense and Sinodefence.com

581) China has ordered another nine Ka-28 Helix helicopters, of which the first three were flight tested off the assembly line in Russia in October 2009, Source Xinhua, “The first three Ka-28 China bought in Russia off the assembly line (translated)”, 9 October 2009, (http://news.xinhuanet.com/mil/2009-10/09/content_12197430.htm).
PLANAF helicopter pilots are also improving their flying skills. In recent years, helicopter pilots have acquired the ability to land on ships at night\textsuperscript{582} and in bad weather conditions.\textsuperscript{583}

**PLANAF Special Aircraft**

The PLANAF operates a number of special aircraft that are force multipliers for naval operations. They are Airborne Early Warning (AEW), Electronic Intelligence (ELINT), Maritime Patrol Aircraft (MPA), ASW aircraft and air-to-air refueling aircraft (AAR)

<table>
<thead>
<tr>
<th>Designation</th>
<th>Role</th>
<th>Quantity</th>
<th>Manufacturer, Country</th>
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</thead>
<tbody>
<tr>
<td>KJ-2000</td>
<td>AEW</td>
<td>3</td>
<td>N/A</td>
</tr>
<tr>
<td>KJ-200 (Y-8W)</td>
<td>AEW</td>
<td>(2)</td>
<td>Shaanxi, China</td>
</tr>
<tr>
<td>Y-8J\textsuperscript{584}</td>
<td>AEW</td>
<td>3</td>
<td>Shaanxi, China</td>
</tr>
<tr>
<td>Y-8JB</td>
<td>ELINT</td>
<td>4</td>
<td>Shaanxi, China</td>
</tr>
<tr>
<td>Y-8X</td>
<td>MPA\textsuperscript{585}</td>
<td>4</td>
<td>Shaanxi, China</td>
</tr>
<tr>
<td>Y-8Q\textsuperscript{586}</td>
<td>ASW</td>
<td>-</td>
<td>Shaanxi, China</td>
</tr>
<tr>
<td>H-6B</td>
<td>Air-to-Air Refueling</td>
<td>3</td>
<td>Xi’an, China</td>
</tr>
</tbody>
</table>

*Table 6. PLANAF special aircraft. Source: Jane’s Defense and Sinodefence.com\textsuperscript{584585586}*  

The PLAN is aware of the importance of these capabilities, and is slowly improving them and acquiring more aircraft. Recently, the PLAN has ordered two KJ-200 AEW aircraft.\textsuperscript{587} These specialist aircraft are all required to support a blue water navy, though preferably, apart from the air-to-air refueling, these capabilities should be onboard the carrier. China does have ASW helicopters, though they do not have a carrier capable AEW or ELINT capability. China has the option of buying the Russian KA-31 Radar Picket naval AEW helicopter, which is used by Russia and India.\textsuperscript{588} Alternatively, they would have to modify one of their own helicopters. This capability is not really required until the

\textsuperscript{582) PLA Daily, “Zhao Luying takes lead in helicopter night ship landing”, 5 May 2008.}  
\textsuperscript{584) Far less capable than KJ-2000 and KJ-200, source, Chinese Military Aviation, Y-8J Cub”, 26 April 2009, (http://cnair81.cn/y-8x_sh5_a-50i.htm).}  
\textsuperscript{585) Maritime Patrol Aircraft (MPA)}  
\textsuperscript{586) Y-8Q ASW Maritime Patrol Aircraft allegedly under development, Chinese Military Aviation, “Y-8X Cub”, 28 October 2008}  
\textsuperscript{587) PLAN has ordered two KJ-200 AEW, source: Chinese Military Aviation, “KJ-200”, 6 March 2009, (http://cnair81.cn/y-8x_sh5_a-50i.htm).}  
first indigenous carrier is declared operational between 2015-2020. At the same time the PLAN will require an ELINT capability, which should preferably be onboard a fixed wing aircraft, since it would enable it to get close to the source of communication it is listening to. China does not have such a capability that is carrier capable, and neither does Russia.

**PLAN Combat Vessels**

The current inventory of naval surface vessels in the PLAN has been acquired for its previous task of defending mainland China, and for a potential Taiwan crisis, where the role of the PLAN is to establish sea control along the Chinese coast, around Taiwan and as far out in the South and East China Sea as possible. In doing so, the PLAN would prevent the US Navy from coming to the assistance of Taiwan in case of a crisis. This means that a lot of the Chinese ships are not of a size that enables them to sail on the deep seas. The size of a ship is important for blue water operations for several reasons. A large ship can carry more supplies and will not need to replenish as often. A large ship is better able to cope with the large waves of the deep sea, especially in bad weather. A large ship can carry more and larger weapons, which enables it to master all types of maritime warfare. And finally, a large ship can carry 1-2 helicopters and has a hangar to shelter and maintain the helicopters. Smaller ships do not have these characteristics and are therefore unsuited for blue water operations. In the US Navy, the smallest ships used on the deep seas in carrier groups are frigates with a displacement of 4,100 tons and measuring 133m in length. In the following, this size of ship will be used to gauge whether PLAN surface vessels are suited as blue water ships. Many of the Chinese ships were built before 2000, and are of a significantly lower technology level than the ships that have been built after 2000 - and in particular ships built after 2004. This will be also confirmed by the capability assessment of the ships which follows later in this chapter. For this reason, the following list will deem the ships built prior to 2000 as not being worthy of a modern PLAN blue water navy.
<table>
<thead>
<tr>
<th>Ship</th>
<th>NATO name</th>
<th>Built</th>
<th>No. of ships</th>
<th>Displacement</th>
<th>Blue water</th>
</tr>
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<tbody>
<tr>
<td><strong>Destroyers</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Type 051C Luzhou</td>
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<td>2004-2007</td>
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<tr>
<td>Type 052C Luyang-II</td>
<td></td>
<td>2003-2005</td>
<td>2</td>
<td>5900</td>
<td>Yes</td>
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<tr>
<td>Type 052B Luyang</td>
<td></td>
<td>2002-2004</td>
<td>2</td>
<td>5850</td>
<td>Yes</td>
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<tr>
<td>Project 956/EM</td>
<td>Sovremenny</td>
<td>2001-2004</td>
<td>4</td>
<td>8350</td>
<td>Yes</td>
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<tr>
<td>Type 051B Luhai</td>
<td></td>
<td>1997-1998</td>
<td>1</td>
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</tr>
<tr>
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<td>1991-1996</td>
<td>2</td>
<td>4800</td>
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<tr>
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<td><strong>Frigates</strong></td>
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<td>Type 054A Jiangkai-II</td>
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<tr>
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<td>6</td>
<td>1960</td>
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<td>Type 053HT-H Jianghu-IV</td>
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<td>1985</td>
<td>1</td>
<td>1960</td>
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<td>Type 053H2 Jianghu-III</td>
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<td>1960</td>
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<tr>
<td><strong>Corvettes and Fast Attack Craft</strong></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Type 022 Houbei</td>
<td></td>
<td>2005-2009</td>
<td>40+</td>
<td>220</td>
<td>No</td>
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<tr>
<td>Type 037-II Houjian</td>
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<td>1991-1995</td>
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<td>520</td>
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<td>Type 037-IG Houxin</td>
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<tr>
<td>Type 037-IS Haiqing</td>
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<td>20</td>
<td>480</td>
<td>No</td>
</tr>
<tr>
<td>Type 037-I Haijiu</td>
<td></td>
<td>1984-1990</td>
<td>4</td>
<td>450</td>
<td>No</td>
</tr>
</tbody>
</table>

*Table 7 PLAN surface ships suitable for blue water operations. Source: Jane’s Defense and Sinodefence.com*

Based on an assessment of age and size of the ships, the PLAN currently has 18 warships of destroyer and frigate size that in principle are blue water capable. Later in this chapter, the armament of the vessels will be assessed to determine the blue water war fighting capabilities of these vessels. All the Chinese built ships that are deemed capable of blue water operations are built after 2004, and in accordance with pictures released on the Chinese internet, China is currently building more blue water capable Type 054A Jiangkai-II Missile Frigates.\(^{589}\) This supports the strategic decision that China is on its way to developing a blue water navy.

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Surface Ship Combat Capabilities

A blue water carrier task group must as a minimum be able to defend itself against air, surface and sub-surface threats (the three domains), and if the navy is to have a MOOTW or PP capability, there must be a capability to attack targets ashore as well. Most western navy vessels have the capability to fight in all three domains, but sometimes a ship has a specialty in which it is particularly capable. By combining ships that are specialized in one of the three domains, a carrier task group can be created that can defend itself on its own, without support from land based capabilities. Of the weapons onboard the Chinese ships, none are at the standard of similar western systems. The PLAN weapon systems are either Russian manufactured or they are produced indigenously, either by copying Russian weapons or by producing them under license. In the table below is a list of PLAN surface ships with an assessment of how modern the ships are, and an assessment of the capabilities the ships have in terms of air defense, ASuW and ASW, and land attack.

The below table shows that PLAN destroyers and frigates lack fundamental capabilities required to defend the carrier group. They also lack land attack capabilities, which means that with the current armament onboard the ships, the navy will only be suitable for conducting SLOC operations. If the PLAN is to have a land attack capability, it will have to acquire either Land Attack Cruise Missiles (LACM), multirole fighters for the aircraft carrier, or both. The air defense capabilities of the navy are of an older type, but they are improving as the HHQ-16 SAM system is becoming available on the Type 054A Jiangkai-II Frigate. It is the general belief among western experts that the Chinese ASW capabilities are not very advanced and that it is a weak point of the PLAN. If the PLAN is serious about the creation of a blue water navy, then this issue must be resolved for the carrier group to be able to operate freely. One way of coping with this is to use hunter-killer submarines; however, this will not be enough to substitute a capable ship based ASW capability. The PLAN operates three types of ASW helicopters, though the oldest, the AS 565 SA Panther, is gradually being phased out. The most capable ASW helicopter is the Russian Ka-28 Helix helicopter, of which the PLAN has only six in the ASW role. These helicopters operate on the four Sovremenny class destroyers, where they conduct ASW missions as well as anti-ship targeting operations for the very capable SA-N-22 Sunburn missile.

The third ASW helicopter is the Z-9C, which is less capable than the KA-28 Helix, but is indigenously produced. The PLAN has 25 Z-9C, of which some are Search and Rescue, and an improved

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variant Z-9D is currently under development. The Z-9C in the ASW configuration is equipped with dipping sonar, sonar buoys, magnetic anomaly detector and two external ASW torpedo pylons.

Assessment matrix:

- : Available – fairly modern capability
- : Available – but limited capability compared to similar western systems
- : Not available or very substandard

<table>
<thead>
<tr>
<th>Designation</th>
<th>NATO Name</th>
<th>Pre-2000</th>
<th>Post-2000</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Air Defense</td>
</tr>
<tr>
<td><strong>Destroyers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type 051C</td>
<td>Luzhou</td>
<td>2</td>
<td>SA-N-6</td>
<td>YJ-83</td>
</tr>
<tr>
<td>Type 052C</td>
<td>Luyang-II</td>
<td>2</td>
<td>HHQ-9</td>
<td>YJ-62</td>
</tr>
<tr>
<td>Type 052B</td>
<td>Luyang-I</td>
<td>2</td>
<td>SA-N-12</td>
<td>YJ-83</td>
</tr>
<tr>
<td>Project 956/EM</td>
<td>Sovremenny</td>
<td>4</td>
<td>SA-N-7</td>
<td>SS-N-22</td>
</tr>
<tr>
<td>Type 051B</td>
<td>Luhai</td>
<td>1</td>
<td>HHQ-7</td>
<td>YJ-83</td>
</tr>
<tr>
<td>Type 052</td>
<td>Luhu</td>
<td>2</td>
<td>HHQ-7</td>
<td>YJ-83</td>
</tr>
<tr>
<td>Type 051</td>
<td>Luda</td>
<td>13</td>
<td>HHQ-7/Guns</td>
<td>YJ-83/HJ-1J</td>
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<td><strong>Frigates</strong></td>
<td></td>
<td></td>
<td></td>
<td>Air Defense</td>
</tr>
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<td>Jiangkai-II</td>
<td>6</td>
<td>HHQ-16</td>
<td>YJ-83</td>
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<td>Type 054</td>
<td>Jiangkai-I</td>
<td>2</td>
<td>HHQ-7</td>
<td>YJ-83</td>
</tr>
<tr>
<td>Type 053H3</td>
<td>Jiangwei-II</td>
<td>10</td>
<td>HHQ-7</td>
<td>YJ-83</td>
</tr>
<tr>
<td>Type 053H2G</td>
<td>Jiangwei-I</td>
<td>4</td>
<td>HHQ-61B</td>
<td>YJ-8A</td>
</tr>
<tr>
<td>Type 053H1G</td>
<td>Jianghu-V</td>
<td>6</td>
<td>Guns</td>
<td>YJ-83A</td>
</tr>
<tr>
<td>Type 053H2</td>
<td>Jianghu-III</td>
<td>3</td>
<td>Guns</td>
<td>YJ-8A</td>
</tr>
<tr>
<td>Type 053H1</td>
<td>Jianghu-II</td>
<td>8</td>
<td>Guns</td>
<td>YJ-8A</td>
</tr>
<tr>
<td>Type 053H</td>
<td>Jianghu-I</td>
<td>11</td>
<td>Guns</td>
<td>SY-1 (SS-N-2)</td>
</tr>
</tbody>
</table>

Table 8 Assessment of Blue Water capability of surface ships. Source: Jane’s Defense and Sinodefence.com

593) Designed before 2000 indicating a less capable vessel of an older make.
594) Designed after 2000 indicating that it is a more modern and capable ship.
596) Variable depth sonar which is inferior to western designs.
Anti-Ship Ballistic Missiles

For the purpose of preventing the U.S. Navy from approaching Taiwan with aircraft carriers in case of a crisis, the PLA is in the process of developing an Anti-Ship Ballistic Missile (ASBM) capability, by fitting a guidance, maneuvering and tracking capability onto a CSS-5 DF-21 Medium Range Ballistic Missile.\footnote{One of the best reports written on the Chinese ASBM program is Eric Hagt and Matthew Durnin, “China’s Antiship Ballistic Missile”, \textit{Naval War College Review, Autumn 2009, Vol 62, No. 4.} (http://www.nwc.navy.mil/getattachment/bdcf4031-4fb7-48a8-a029-5c116969c35c/China-s-Antiship-Ballistic-Missile--Developments-a).} It is basically a ballistic missile modified to target ships at sea. The system has not been flight tested yet, but the U.S. Office of Naval Intelligence claims that the Chinese have conducted three ground tests of the missile since 2006.\footnote{Bloomberg, “China New Missile May Create a No-Go Zone for U.S. Fleet”, 17 November 2009, (http://www.bloomberg.com/apps/news?pid=20601080&sid=annrZr9ybk7A).} Before this system becomes operational, there will be a whole range of technological, organizational, and doctrinal challenges, which the Chinese will have to solve. Fielding an operational ASBM capability requires more than just an operational missile. It requires a C4ISR system with sensors that can detect, identify and track a U.S. carrier strike fleet, provide midcourse guidance to the missile and facilitate battle damage assessment after the strike. Currently China does not have a continued satellite coverage over the South China Sea,\footnote{Eric Hagt and Matthew Durnin, “China’s Antiship Ballistic Missile”, \textit{Naval War College Review, Autumn 2009, Vol 62, No. 4, pp. 100-102,} (http://www.nwc.navy.mil/getattachment/bdcf4031-4fb7-48a8-a029-5c116969c35c/China-s-Antiship-Ballistic-Missile--Developments-a).} but China has extensive plans for improving the satellite coverage. See chapter 11 for more detail. The implications of the ASBM system, should it become operational, are wide. It would demonstrate the level of technology China is able to develop, and be a testimony to the maturity of the Chinese joint C4ISR system, which is not only used in the context of ASBM, but has a PLA wide application. The U.S. Navy has not previously faced a threat from a highly accurate ballistic missile capable of hitting moving ships at sea, and the ability of the missile to change course makes it more difficult to intercept than a non-maneuvering ballistic missile.\footnote{Ronald O'Rourke, “China’s Naval Modernization: Implications for U.S. Navy capabilities – Background and issues for congress”, Congressional Research Service, Foreign Affairs, Defense and Trade Division, 16 April 2008, p. CRS-3.} If unchecked the ASBM system will become a deterrent for the U.S. Navy with profound consequences for strategic deterrence, military operations, arms control and the balance of power in the western Pacific.\footnote{Andrew S. Erickson and David D. Yang, “Using the Land to Control the Sea? Chinese Analysts Consider the Antiship Ballistic Missile”, \textit{Naval War College Review, Autumn 2009, Vol. 62, No. 4, pp. 53-54,} (http://andrewerickson.files.wordpress.com/2009/09/erickson-article-erickson-yang-china-asbm-nwcr-2009-autumn-aspx.pdf). See also Paul S. Giarra testimony to the U.S.-China Economic and Security Review Commission on “The Implications of China’s Naval Modernization for the United States”, 11 June 2009, pp. 32-34. (http://uscc.gov/hearings/2009hearings/transcripts/09_06_11_trans/09_06_11_trans.pdf)} The potential impact of the ASBM system on a space arms race is discussed in chapter 11.
Submarines

Submarines are considered to be an important part of a blue water navy. A submarine has the ability to survey the area around the task group unnoticed and provide intelligence about enemy navy vessels approaching the blue water navy task group. In case of an enemy navy ship approaching the task group and potentially becoming a threat, the submarine can destroy the enemy vessel before it becomes a threat, using stealth and surprise as its tools. This concept was demonstrated during the Falklands War in 1982, when the Argentine cruiser “General Belgrano” approached the British carrier battle group, when Belgrano approached the Falkland Islands. Thereby, the Belgrano violated the maritime exclusion zone imposed by the British, and posed a serious threat to the British carrier battle group. In response, the British nuclear powered submarine HMS Conqueror moved in and torpedoed the Belgrano, which subsequently sunk. Nuclear powered submarines are particularly useful for a blue water navy, since they can stay submerged for prolonged periods of time. The PLAN has been developing a range of diesel-electric and nuclear powered submarines for some years, and has the following submarines in its inventory:

<table>
<thead>
<tr>
<th>Type</th>
<th>NATO name</th>
<th>Built</th>
<th>No.</th>
<th>Role</th>
<th>ASW</th>
<th>ASuW</th>
<th>Land attack</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuclear powered submarines</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type 094</td>
<td>Jin</td>
<td>2004-2007</td>
<td>2</td>
<td>Nuclear deterrence</td>
<td>Torpedoes</td>
<td>Torpedoes</td>
<td>12 x JL-2 SLBM</td>
</tr>
<tr>
<td>Type 093</td>
<td>Shang</td>
<td>2002-2006</td>
<td>2</td>
<td>Attack submarine</td>
<td>Torpedoes</td>
<td>YJ-82 anti-ship missile</td>
<td>LACM indicated but not confirmed</td>
</tr>
<tr>
<td>Type 092</td>
<td>Xia</td>
<td>1970-1983</td>
<td>1</td>
<td>Nuclear deterrence</td>
<td>Torpedoes</td>
<td>Torpedoes</td>
<td>12 x JL-1 SLBM</td>
</tr>
<tr>
<td>Type 091</td>
<td>Han</td>
<td>1970-1990</td>
<td>3</td>
<td>Attack submarine</td>
<td>Torpedoes</td>
<td>Torpedoes (YJ-82 anti-ship missile Tbc.)</td>
<td>No</td>
</tr>
<tr>
<td>Diesel-Electric submarines</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type 039A/B</td>
<td>Yuan</td>
<td>2004-2009</td>
<td>4</td>
<td>Attack submarine</td>
<td>Torpedoes</td>
<td>YJ-82 anti-ship missile</td>
<td>No</td>
</tr>
<tr>
<td>Project 636/877</td>
<td>Kilo</td>
<td>1994-2007</td>
<td>12</td>
<td>Attack submarine</td>
<td>Torpedoes</td>
<td>3M-54E anti-ship missile</td>
<td>No</td>
</tr>
<tr>
<td>Type 039/G/G1</td>
<td>Song</td>
<td>1994-2007</td>
<td>16</td>
<td>Attack submarine</td>
<td>Torpedoes</td>
<td>YJ-82 Anti-ship missile</td>
<td>LACM indicated but not confirmed</td>
</tr>
<tr>
<td>Type 035</td>
<td>Ming</td>
<td>1974-2001</td>
<td>18</td>
<td>Attack submarine</td>
<td>Torpedoes</td>
<td>Torpedoes</td>
<td>No</td>
</tr>
<tr>
<td>Type 033</td>
<td>Romeo</td>
<td>1965-1984</td>
<td>8</td>
<td>Attack submarine</td>
<td>Torpedoes</td>
<td>Torpedoes</td>
<td>No</td>
</tr>
</tbody>
</table>

Table 9 PLAN Submarines. Source: Sinodefence.com and Jane’s Defense

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The Type 093 (Shang) nuclear powered attack submarine is the obvious choice for participation in a blue water navy task group. Type 094 is also a nuclear submarine, but its role is nuclear deterrence and not conventional operations. The large size of the Type 093 submarine enables it to cope with the deep seas, and since it is nuclear powered, it can stay submerged for longer periods of time and requires replenishment less often. The two Type 093 were built from 2002 to 2006, and after four years of sea trials both submarines entered operational service in 2009.604 The Type 093 is a Chinese built second generation nuclear powered submarine with a displacement of 6-7000 tons when submerged.605 It has a sophisticated sonar system, and is fitted with six torpedo tubes through which it can launch a range of anti-submarine and anti-surface vessel torpedoes, including the YJ-82 anti-ship missile. Some reports suggest that the YJ-2, which is the ship launched version of YJ-82, has been tested successfully with a GPS satellite navigation receiver, which would give the missile a land attack capability.606 The Chinese have for some time been working on reducing the acoustic signature of the submarine, and according to Chinese unconfirmed sources, they have achieved some success, even though it is not as quiet as the best American submarines.607 The PLAN has for some time sought to extend the mission duration of the nuclear submarines. In the mid-1980’s, the Type 091 Han nuclear power submarine carried out a 90 day undersea endurance trial,608 which suggests that the Chinese nuclear powered submarines will be able to remain submerged for a prolonged period of time.

In the past, China’s submarine force has not sailed much. There are no data on single day or short duration exercises; however, when it comes to patrols of a longer duration, the PLAN submarine force is known to not be very experienced. From 1981 to 2006, the Chinese submarine force performed no more than six patrols per year, with a submarine force of approximately 54 submarines.609 In 2007, the submarine force sailed 7 patrols, but in 2008 the number of patrols almost doubled to 12, signifying intensified training and a more mature submarine force. This

606) It has been reported that YJ-2 (the ship launched version of YJ-82) has been successfully tested with a GPS satellite navigation receiver. If that is the case then the YJ-82 may acquire Land Attack capabilities. It has a warhead of 165 kg and a range of 42 km. Source: Janes Underwater Warfare Systems, “CSS-N-4 Sardine (YJ-1/C-801); CSS-N-8 Saccade (YJ-2 [YJ-82/YJ-12]/C-802/Noor or Koor)”, 22 April 2009.
number of patrols is still very low compared to the U.S., where each submarine will plan at least one patrol per year.

<table>
<thead>
<tr>
<th>Chinese Submarine Patrols 1981-2008</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Graph showing Chinese submarine patrols 1981-2008" /></td>
</tr>
</tbody>
</table>

Chinese attack submarines conducted 12 patrols in 2008, double the number from 2007. Yet Chinese ballistic missile submarines have yet to conduct a deterrent patrol.

**Figure 2 Chinese submarine patrols 1981 – 2008. Source: Federation of American Scientists**

Navies have submarine tenders to replenish submarines while they are at sea, and to provide maintenance, repair and emergency salvage. Since 1975, the PLAN has only had one small submarine tender\(^{610}\) (Type 648). However, in 2008, pictures were published on the internet of a large (estimated 9500 tons) new ocean going submarine tender, which is being built by the Guangzhou Shipyard Co. Ltd.\(^{611}\) A submarine tender of this size will enable the PLAN to support blue water submarine operations.

A Chinese blue water navy will not be operational until after 2020 when the aircraft carrier may become operational. This means that the PLAN has another decade to gain experience with its submarine force and improve its technology levels further in terms of noise reduction and improvements on sonar technology and weapons. The current Type 093 submarine could support all types of navies (SLOC, MOOTW, PP). If China intends to acquire a MOOTW or a PP navy, then the PLAN could develop a submarine launched Land Attack Cruise Missiles similar to submarines in western navies.

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611) Pictures can be found at (http://china-pla.blogspot.com/2008/11/new-submarine-tender.html).
A Blue Water Amphibious Force

If China is to have a MOOTW or a PP capable blue water navy, then it is a requirement that the PLAN have a blue water capable amphibious force that is capable of transporting amphibious forces along with helicopters, amphibious armored fighting vehicles and logistical supplies across the ocean. This requires a number of large ocean capable vessels with the ability to insert the amphibious forces and its logistical supplies ashore, potentially in an opposed landing. The various types of operations where forces are used ashore, or where military force is projected ashore, can be listed as follows:

<table>
<thead>
<tr>
<th>MOOTW</th>
<th>Types of operations</th>
<th>Increasing use of force</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Providing aid to suffering population</td>
<td></td>
</tr>
<tr>
<td></td>
<td>emergency rescue and relief of from natural disasters</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non Combatant Evacuation (NEO)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>UN Peacekeeping operation with consent of the parties</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Missile strike on strategic targets</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Air Strike on strategic targets</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Frogmen or Special Forces covert intelligence gathering operations ashore</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Anti terrorist operation with Special Forces attack ashore inserted by parachute or helicopter</td>
<td></td>
</tr>
<tr>
<td>PP</td>
<td>Temporary loanding of special and amphibious forces, with subsequent extraction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Longer term landing of large amphibious force</td>
<td></td>
</tr>
</tbody>
</table>

Table 10 Types of operations where forces or force is projected ashore

Most of the operations seen above require insertion of soldiers, Special Forces or amphibious forces ashore, and to do this, a specialized amphibious force is required.

Many of the MOOTW operations involve the insertion of a few hundred soldiers ashore, and can be accomplished by a relatively small amphibious force. However, to do it in an effective way requires a large number of transport helicopters to ensure a rapid insertion ashore and continued logistical supplies between the forces ashore and the task group afloat.
Chapter 8

An example of a MOOTW amphibious force is the British amphibious task group, which has the following vessels and capabilities.612

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>No.</th>
<th>Helicopters</th>
<th>Landing craft</th>
<th>Vehicles</th>
<th>Soldiers</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMS Ocean</td>
<td>Helicopter Amphibious Carrier</td>
<td>1</td>
<td>12 support helicopters 6 attack helicopters</td>
<td>4</td>
<td>40</td>
<td>480(612)</td>
</tr>
<tr>
<td>Albion Class</td>
<td>Landing Platform Dock</td>
<td>2</td>
<td>2 support helicopters</td>
<td>4</td>
<td>6 tanks</td>
<td>305 (710)</td>
</tr>
<tr>
<td>Bay class</td>
<td>Landing ship Dock</td>
<td>4</td>
<td>2 support helicopters</td>
<td>3</td>
<td>24 tanks</td>
<td>356</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>18 support helicopters 6 attack helicopters</strong></td>
<td><strong>24</strong></td>
<td><strong>100 veh.</strong></td>
<td><strong>2500 (3600)</strong></td>
</tr>
</tbody>
</table>

*Table 11 British Royal Navy amphibious vessels. Source: British Navy website*

The table above shows the British amphibious lift capability, which is sufficient to lift the 3rd Commando Brigade Royal Marines.613 What is important here, is that all the ships are ocean capable, and are able of carrying their Landing Craft Units in their cargo bay.

The PLAN inventory of large amphibious landing vessels is as follows:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>No.</th>
<th>Displacement</th>
<th>Heli</th>
<th>Landing craft</th>
<th>Cargo</th>
<th>Blue Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 071¹⁶</td>
<td>Landing Platform Dock</td>
<td>1</td>
<td>17,000 ~20,000</td>
<td>4 Z-8K¹⁵</td>
<td>(4)</td>
<td>Estimate 500<del>800 troops 15</del>20 AAV</td>
<td>Yes</td>
</tr>
<tr>
<td>Type 072-IV</td>
<td>Large Landing Ship</td>
<td>10</td>
<td>4,800</td>
<td>Platform for 2</td>
<td>4</td>
<td>250 troops 10 tanks</td>
<td>No</td>
</tr>
<tr>
<td>Type 072-II</td>
<td>Large Landing Ship</td>
<td>10</td>
<td>4,800</td>
<td>Platform for 2</td>
<td>4</td>
<td>250 troops 10 tanks</td>
<td>No</td>
</tr>
<tr>
<td>Type 072</td>
<td>Large Landing Ship</td>
<td>7</td>
<td>3,110</td>
<td>No</td>
<td>2</td>
<td>200 troops 10 tanks</td>
<td>No</td>
</tr>
</tbody>
</table>

*Table 12 PLAN inventory of large amphibious landing ships. Source: Jane’s Defense, Amphibious and Special Forces*

614) All numbers are estimated as this vessel has not been used in exercises yet, Source:Sinodefence.com, “Type 071 Landing Platform Dock”, 5 June 208, (http://www.sinodefence.com/navy/amphibious/type071.asp).
In addition to the landing ships listed above, the PLAN has about 500 smaller landing crafts used to sail troops and logistical supplies ashore that are not blue water capable due to their size.

Of the landing ships listed above, only the new Type 071 Landing Platform Dock is blue water capable. The vessel is very versatile and can support many roles apart from being an amphibious platform. It can also be a logistic support ship, disaster relief, a field hospital, and it can carry a Joint force Command and Control center, capable of commanding a naval amphibious operation. According to a press release, China is planning to acquire six Type 071, which will provide her navy with the capability of carrying 24 Z-8K helicopters, between 3000 – 4,800 troops and around 100 vehicles. A force equivalent to what the British MOOTW navy can deploy.

Even though the Type 072-II and Type 072-IV have a displacement of 4,800 tons fully loaded, which should enable blue water operations, pictures of the ships suggest that there is no room for the troops to live onboard the ships, only for transport. In a blue water navy, troops can expect to be living onboard the vessels for a prolonged period of time, and the vessels must be designed to accommodate them. These two types of vessels are designed for operations in the South China Sea or a Taiwan crisis, with a short transit before offloading.

Currently, China’s blue water amphibious capability is limited by a severe shortage of amphibious vessels. If the above-mentioned press reports are correct and the PLAN acquires up to six Type 071 Landing Platform Docks, the PLAN will have acquired the capability of deploying a marine force equivalent to a brigade, which will be a force equivalent to a MOOTW Navy.

To facilitate fast transition of forces ashore, provide fire support to ground forces in combat, and to maintain a constant logistical supply, an amphibious force needs a lot of different helicopters. In order to deploy these capabilities, the amphibious force is often supported by helicopter carriers, as it is seen in both the US and Britain. The PLAN is also planning to acquire such capabilities. In July 2008, the defense magazine Tempur reported that:

“PLAN had finalized the design of a Type 081 LHD Helicopter Carrier following the conclusion of the third critical design review. Subsequently the Dalian-based and Wuhan-based shipyards were awarded contracts to undertake detailed engineering drawings.” Later it states that “Present plans calls for Dalian shipyard to build three LHD and Wuhan shipyard to build another three.” “The principal difference between the Type 071 and Type 081 is the top deck superstructure that will house the island incorporating the bridge and the combat information center as well as a flat top deck capable of housing eight heavy lift helicopters and an internal bay capable of housing four additional helicopters”

617) Ibid.
618) Ibid.
If the press reports are correct, then the PLAN has plans to acquire a robust amphibious blue water capable force, which has the capabilities equivalent to a MOOTW navy.

**Marine Corps Forces**

China’s amphibious marine corps forces are organized within the PLAN and the PLA ground force. However, only the PLAN has dedicated marine corps amphibious forces, who’s only job it is to conduct beach landings. The current PLAN marine corps organization is a relative new and modest organization which was created in 1980. Compared to the amphibious forces organized within the PLA ground force, the PLAN marine corps seems very limited. It is a force of approximately 10,000-12,000 marines, organized in two brigades. Sources of information on the two brigades do not agree on the precise organization of the marine brigades; however, they approximately consist of the following units:

- one infantry battalion,
- one air defense battalion,
- one armored mechanized infantry battalion,
- two amphibious reconnaissance battalions,
- two artillery battalions,
- two tank battalions,
- special forces unit,
- engineer/chemical-biological battalion,
- communication/electronic warfare battalion.

The PLAN marine brigades are heavily equipped with amphibiously capable tanks and infantry fighting vehicles, which enables the marines able to land in spite of opposition on the beach, provided that they are supported with suppressive fires during the vulnerable swimming phase. The force is equipped with the following equipment:

- Type 63A Amphibious tank, which can be launched from amphibious warfare ships 5-7 km from the

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coast and travel to shore at high speed. It has a computerized fire-control system which enables it to fire accurately both on land and at sea.\(^{621}\)

- Type 63 Amphibious Infantry Fighting Vehicle (tracked).
- ZSL92 Amphibious Infantry Fighting Vehicle (wheeled).
- Type 83 towed artillery.
- Type 63, 107mm Multiple Rocket Launcher.

Compared to the equipment allocated to the two PLA ground force amphibious mechanized infantry divisions under Nanjing and Guangzhou MR, the two PLAN marine brigades seem to have a lower priority, compared to the two ground force divisions. I.e. the Nanjing MR, 1 GA, 1\(^{st}\) Amphibious Mechanized Infantry Division is equipped with the more modern Type-97 IFV, which was implemented in the PLA ground force in 2006. The same ground force division has also been involved in the development of a tri-service digitalized C4I platform for amphibious operations, which indicates that the ground force unit is at the forefront of the development of amphibious concepts and doctrine.\(^{622}\) This shows that the PLA has been prioritizing the preparations for a Taiwan operation, where the ground force amphibious divisions as the main units, not the PLAN marine brigades. The ground force divisions are receiving the best equipment first, and more importantly; they are the units designated for technological and doctrinal development of amphibious operations.

The PLAN marine brigades are not exclusively organized for the participation in a Taiwan operation. If that were the case, then they would logically be organized in the East Sea Fleet, which is under Nanjing MR, closest to Taiwan. However, the PLAN marine brigades are organized in the South Sea Fleet, which is under the Guangzhou MR. As such, the PLAN marine brigades are also responsible for amphibious operations in the South China Sea, and the marines are responsible for manning those of the Spratly Islands in the South China Sea which are occupied by China.\(^{623}\) The blue water capable Type 071 Landing Platform Dock is also organized in the South Sea Fleet.\(^{624}\)

If the PLA were to develop a blue water marine force landing capability, then it would be logical to make the PLAN marine corps the main amphibious capability, with their main task being to go ashore in MOOTW operations. If China were to develop such a capability, then it would be natural that the PLAN marine brigades would be equipped and trained to the standards of the ground force amphibious mechanized infantry divisions, and thus become the leading force in the development of amphibious operations. The PLAN currently lacks the sea lift capability to transport the forces with

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a blue water navy. As a reserve force, should larger forces be required, the PLA ground force has
the two amphibious mechanized infantry division, which are reaction force units and well trained in
amphibious operations. However, to deploy these forces, even more blue water capable landing ship
transport capacity would be required. In a comparison with marine forces of other states, the PLAN
has two marine brigades, whereas the United Kingdom has one brigade, which is sufficient to con-
duct projection of power ashore equivalent to a MOOTW force. However, this is dwarfed by the marine
force capabilities of the U.S. Marine Corps, who currently have 201,000 active duty US marines.625
The U.S. Marine Corps is a good example of a large scale amphibious capability for a PP blue water

Fire support. An opposed amphibious landing is heavily dependent on suppression of enemy fire
in the vulnerable phase when the marine forces are swimming and going ashore. During this phase,
the defensive forces ashore are normally suppressed by heavy shore bombardment from support-
ing ship guns and bomber aircraft. The PLA seems to have a different concept. The PLA doctrine for
amphibious operations relies more on special forces disruption of enemy defenses and tempo in the
amphibious phase, rather than on raw fire power.626 Such a doctrine is based on a general accep-
tance of a high level of casualties, as the defensive forces are not suppressed and therefore better
able to direct fire at the amphibious forces as they are swimming ashore. However, in a blue water
operation, it is unlikely that one can deploy a large amount of amphibious forces ashore at the same
time, due to limitations in the number of ships and landing crafts available. Therefore, defense sup-
pression becomes all the more important to conduct a successful landing.

<table>
<thead>
<tr>
<th></th>
<th>Gun for shore bombardment</th>
<th>Rounds per minute</th>
<th>Rocket Launcher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 051C Destroyer</td>
<td>1 x single barrel 100 mm</td>
<td>90</td>
<td>None</td>
</tr>
<tr>
<td>Type 052C Destroyer</td>
<td>1 x single barrel 100 mm</td>
<td>90</td>
<td>None</td>
</tr>
<tr>
<td>Type 052B Destroyer</td>
<td>1 x single barrel 100 mm</td>
<td>90</td>
<td>None</td>
</tr>
<tr>
<td>Sovremenny 956 Destroyer</td>
<td>2 x double barrel 130 mm</td>
<td>20-35</td>
<td>None</td>
</tr>
<tr>
<td>Sovremenny 956EM Destroyer</td>
<td>1 x double barrel 130 mm</td>
<td>20-35</td>
<td>None</td>
</tr>
<tr>
<td>Type 054/A Frigate</td>
<td>1 x single barrel 76 mm</td>
<td>Unknown</td>
<td>None</td>
</tr>
<tr>
<td>Type 071</td>
<td>1 x single barrel 76 mm</td>
<td>Unknown</td>
<td>4 x 50 tube 120 mm RL</td>
</tr>
</tbody>
</table>

Table 13 Weapons for shore bombardment on the PLAN blue water capable ships. Source: Sinodefence.com

The table above lists the weapons of the PLAN blue water capable ships that are suitable for shore bombardment and defense suppression during an amphibious landing. It shows that most of the ships only have one gun with a relatively small caliber, more designed for air defense and surface targets than for heavy shore bombardment. In a Taiwan amphibious operation, the PLAN generally relies on multiple rocket launchers mounted on landing ships to provide fire support. However, none of the blue water capable destroyers and frigates are equipped with rocket launchers. Only the Type 071 Landing Platform Dock has multiple rocket launchers. If one also takes into account that the PLA is not able to provide close air support from fighter aircraft to ground forces, then it is clear that a Chinese blue water navy is presently very unsuited for conducting an opposed landing, despite the fact that the marines employ amphibious tanks.

**PLAN Maritime Strategy - “Offshore Defense”**

The PLAN component of the active defense strategic guideline is known as “offshore defense”.627 The strategy was developed by General Liu Huaqing, who was commander of the PLAN from 1982 – 1987.628 Liu Huaqing wanted to change the maritime element of China’s national strategy from coastal defense to offshore active defense. Liu Huaqing also wanted to move China’s maritime defense seaward and he drafted a three phased development plan for the PLAN.

Offshore Defense was adopted in 1985, when the threat of a Soviet invasion subsided, and it became possible for China to be less land focused. The doctrine of Offshore Defense was a change of paradigm from the previous doctrine known as “Coastal Defense”. The Offshore Defense doctrine redirected the PLAN maritime activities out to sea, and was in line with Deng Xiaoping’s focus on economic modernization and realization of the ocean resources. The key missions of Offshore Defense are:629

- Keep the enemy within limits and resist invasion from the sea.
- Protect the nation’s territorial sovereignty.
- Safeguard the motherland’s unity and maritime rights.

There is no set definition as to how far out to sea the doctrine goes. Liu Huaqing delineated two strategic maritime areas the nation must be able to control.630 Under Phase One of the PLAN develop-

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ment plan which was to be achieved by 2000, the PLAN must be able to gain “sea control”631 out to the ”First Island Chain”,632 which is a line defined by a series of islands in the East and South China Sea (see illustration below).633

![Map of the First Island Chain](image)

*Figure 3 First Island Chain and Second island chain. Source: U.S. Department of Defense annual report to Congress: Military Power of the People’s Republic of China 2008, p. 25*

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631) A strategy, in which a maritime force controls a defined maritime area, rendering it impossible for an opponent to conduct effective military operations in the area.


633) “First Island Chain” which stretches from Japan to Ryukyus (Okinawa), Taiwan to Pratas, circling the Spratly Islands and then stretching northeast to the Paracel islands along the coast of Vietnam in the northern part of the South China Sea.
Presently, China does this using a combination of submarines operating around the First Island Chain, ballistic missiles deployed in the Fujian-province, and cruise missiles on strategic bombers and maritime vessels. Under Phase Two of Liu’s strategy it is the ambition of the Chinese to be able to conduct a “Sea Denial” strategy out to the “Second Island Chain”, shown in the illustration above. Phase Two is to be achieved by 2020, which is the same milestone for the PLA modernization plan, under which the PLA is to have made major progress.

Phase Three of Liu Huaqing’s maritime strategy is the PLAN becoming a global force by 2050, which is the same milestone set out for the PLA modernization, stating that the PLA must reach the strategic goal of being capable of winning informationized wars by the mid-21st century. Such a development strategy for the PLAN will provide China with a navy that over time will be able to take care of China’s maritime issues of concern, as they are outlined in chapter two.

The concept of using lines as a defensive measure is similar to defense of a fortress in historic times, with defensive measures corresponding to a number of defensive lines. It is a clearly defensive doctrine designed for territorial defense, and not really suited for blue water operations, which by definition can take place all over the world. This means that the current Chinese naval doctrine, as we know it, does not include blue water operations, and if the intentions cited by many authoritative military and political leaders are true, then we can expect a new naval doctrine when the PLAN is ready to leave the East and South China Sea in a decade or two. This doctrine is likely to be much less precise, but can be expected to give guidance as to how the blue water navy is to safeguard Chinese national interests. The “Offshore Defense” doctrine is designed for a predefined geographical area, which allows detailed political guidance and military planning prior to a crisis, whereas blue water operations are much more fluid. For this reason, the PLAN will require a doctrine more based on doctrinal principles and generic guidelines for quick planning of military operations in whatever theatre the navy is required. This is a very complex process, which will require a very intellectual and highly educated planning staff at all levels of the organization.

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635) A strategy, by which it is attempted to deny the enemy the ability to use the sea in a certain geographical area.
**PLAN Informationization of the Blue Water Navy**

In order to establish a modern blue water navy, the navy must be equipped with a modern command and control platform, which links the entire carrier group electronically to facilitate swiftly executable coordinated tactical operations across the fleet for the achievement of strategic, operational and tactical objectives. To do this, the fleet must have a command and control platform that fuses all intelligence information in all three domains (air, surface and subsurface), and which enables establishing a recognized joint operational picture. If the carrier group is planning on operations ashore, then the intelligence picture must include this domain as well. This is what western fleets are striving to achieve, and the PLAN will have to match this if it is to be a navy among equals with western navies.

The PLAN is going through the informationization process along with the rest of the PLA. For the PLAN, it is a long and cumbersome process to create a network between a large variety of 1st and 2nd generation command and control systems onboard the older types of ships. Out of 494 Chinese navy ships, the only ships with a credible 3rd generation Command, Control, Communication, Computers and Intelligence (C4I) system are the Sovremenny destroyers bought from Russia, and also the new large Chinese built destroyers and frigates.\(^640\) Also the modern submarines, including the nuclear submarines, have sophisticated C4I systems. These systems are linked up to the regional theatre level C4I system Qu Dian, which will be described in greater detail in chapter 9 on “Informationization, Joint Doctrine and Training in the PLA”. The good news for the PLAN, is that the ships with the modern C4I system are the same ships that are suited for blue water operations in accordance with the criteria set above. Because the PLAN so far has focused on a deny access strategy in the context of a Taiwan operation, it is unlikely that the Qu Dian and the PLAN C4I systems are designed for blue water operations with a carrier group, mainly because Qu Dian is supported by the Beidou 1 experimental satellite navigation system,\(^641\) which is geographically limited to the area within the first and second Island Chain. However, China is developing a global satellite navigation system, which is planned for operational status in 2015.\(^642\) China does not have an aircraft carrier yet, which means that it is highly unlikely that the current 3rd generation C4I system in the modern warships include the aspect of carrier operations equivalent of a SLOC navy. This will have to be developed. If the PLAN is to develop a C4I system in support of a MOOTW or a PP navy which is capable of projecting power ashore, then the system should encompass the use of special

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forces, offensive air operations, cruise missiles strikes and amphibious operations. To include all these operations in a naval C4I software program is very complex, especially if one is ambitious as to what the software should be able to do in terms of automated processes that will help the planning process. Targeting is critical for a blue water navy, especially if the navy has land targeting capabilities. Targeting is of strategic importance, and target development and approval involves detailed information gathering, analysis and an operational and political approval process. To enable this, the C4I system must include a targeting platform with global reach. The Chinese carrier group must be able to communicate with the navy headquarters for logistical support, and with its strategic headquarters in China for strategic guidance and specific orders, intelligence sharing and targeting approval. It is unlikely that the current C4I system supports these requirements, and the satellite system does not have global coverage.

**Summary - the Development of a Blue Water Navy**

In December 2006, President Hu Jintao said that China would “build a strong and modern navy as the navy was of vital importance in defending state interests and safeguarding national sovereignty and security”. At the PLAN 60 years anniversary in 2009, Hu Jintao followed up on this and said that the PLA Navy “should comprehensively push forward its modernization to constantly enhance its capability to carry out missions in the new century and new phase”. He also stated that China’s armed forces would never be a threat to anyone, and that the PLA Navy would be more open and cooperative in the international maritime security cooperation in the future, and had the goal of building a ‘harmonious ocean’. However, China’s development of a blue water navy is an ambitious political project, which by many will be seen as a zero-sum project, in which China’s gain in power will be at the expense of others. Hu Jintao’s aspirations of building a harmonious ocean will be met with skepticism in many countries, as they are monitoring the buildup of a Chinese blue water navy. The building of a Chinese aircraft carrier will evoke emotions in China and across the globe from admiration to concern, and especially in the Asian region it will raise concerns. The Chinese reason for the development of a blue water navy is to be able to safeguard its national interests, but what this means in future military capabilities and operations is not clear. All the political statements that have been released are associated with the ocean, which implies that Chinese aspirations at the

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moment are to acquire a SLOC navy. However, there are limitations as to how effective a SLOC navy is in terms of safeguarding national interests that are in the land domain, and Chinese political leaders and military planners will one day have to assess, whether China should have the ability to affect the land domain as well.

This chapter has analyzed the PLAN components of a blue water navy and assessed whether they at the present moment are suitable for a SLOC, MOOTW or a PP navy. The analysis shows that the PLAN has a long way to go when it comes to creating a blue water navy, even when it comes to the development of a SLOC navy, with no capability to project power ashore.

<table>
<thead>
<tr>
<th>Components of a blue water navy</th>
<th>SLOC Navy capable</th>
<th>MOOTW Navy capable</th>
<th>PP Navy capable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Varyag Aircraft Carrier with Su-33</td>
<td>Yes, if defensive weapons are installed</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>A Chinese built aircraft carrier</td>
<td>Yes</td>
<td>Depending on carrier catapult and fighter choice</td>
<td>Depending on carrier catapult and fighter choice</td>
</tr>
<tr>
<td>PLAN Surface Vessels (destroyers and frigates)</td>
<td>Yes</td>
<td>No land attack capability</td>
<td>No land attack capability</td>
</tr>
<tr>
<td>Type 093 submarine</td>
<td>Yes</td>
<td>Potential with LACM</td>
<td>Potential with LACM</td>
</tr>
<tr>
<td>Amphibious forces</td>
<td>Not applicable</td>
<td>Not opposed landings Assuming the building of up to six Type 071 Landing Ship Docks and one Type 081 Helicopter carrier</td>
<td>No</td>
</tr>
<tr>
<td>Blue water C4I system</td>
<td>No. Software must be modified with carrier operations software and global communication satellite coverage must be provided. Global satellite navigation capability is under development.</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Table 14 Current status on the PLAN ability to create a SLOC, MOOTW and PP blue water navy.

With a Chinese built aircraft carrier and the use of the PLAN current inventory of modern destroyers and frigates, the PLAN will be able to create a SLOC navy, provided that the carrier group is equipped with a suitable C4I system and global satellite coverage. A SLOC carrier group will be able to patrol the sea lanes and safeguard those of China’s national interests that are related to the maritime environment. If China wishes to achieve the capability of influencing those of its national interests that are in the land domain, then China must acquire a MOOTW or a PP blue water navy. The PLAN
is planning to build up to six Type 071 Landing Ship Docks and a Type 081 LHD Helicopter Carrier, which will provide the PLAN with the capability of a MOOTW navy. With such a force, the PLAN will be able to conduct limited operations ashore, and if the fire support capabilities are improved as well, it will be able to conduct limited opposed landings as well. Such a navy will require significant investments in land attack capabilities and amphibious forces, and the Chinese aircraft carrier(s) should have the ability to launch fighter aircraft loaded with heavy offensive weapon loads. Considering that the Varyag is in dry dock being renovated, and that there are indications that China is ready to start building an aircraft carrier,\(^\text{646}\) it is likely that we in the coming two years will gain a much clearer picture of whether the future Chinese indigenously built aircraft carrier will have such capabilities.

9.

Informationization, Joint Doctrine and Training in the PLA

Following the modernization of PLA weapon systems and technology, it is important to understand what physical capabilities the PLA can employ on the battlefield. However, knowledge of these makes little sense without an understanding of how the PLA intends to employ these weapons. The principle of “how” is written in doctrine, and the understanding of this is essential in order to determine the military efficiency of the PLA, and thereby its capabilities. In this paper, joint doctrine “presents fundamental principles that guide the employment of military forces in coordinated and integrated action towards a common objective. It is authoritative but requires judgment in application.”647 This chapter seeks to describe the development of PLA joint operations, joint doctrine and organization in the context of informationization.

PLA Joint Operations

The 1991 war in Iraq and the 1996 Taiwan Strait crisis convinced the PLA that they should be prepared to deter or fight a medium sized war equivalent to a war zone, which in size is equivalent to an area covering several adjacent provinces. By late 1997, PLA planners articulated the creation of Joint Operations (JO) as a way of fast-forwarding the modernization, which until then had focused on mechanization by acquiring platforms and weapon systems.648 With JO, the PLA would seek a higher degree of integration and coordination among the services. Where a war zone campaign in the past had been dominated by ground forces, the new concept would be that a war zone campaign would be a joint–services operations based campaign. Where previously the land forces had dominated, the new concept was that there would be given equal weight to the four services (land, air, naval and 2nd Artillery Corps). Each of the services would have a leading role in a sub-campaign of its domain, while the other services would have a supporting role. To ensure coordination, commanding officers


from the air, naval and 2nd Artillery Corps forces would be integrated into the existing command structure, which was a land headquarter. At a lower level in the organization, service representatives, or liaison officers, were dispatched for the purpose of informing each other of timing, methods, requirements and target of operations, and for formulating and implementing coordinating plans for their respective sub-campaign.649

The PLA realized that focusing exclusively on mechanization, whilst the modern armed forces of the world were focusing on network centric warfare, the PLA would still lag behind a generation when the mechanization process was completed.650 So in order to catch up simultaneously on both parameters, the PLA decided that their modernization should encompass both mechanization and informationization. To operationally embrace this change the PLA developed the concept of Integrated Joint Operations (IJO). Where JO was service based with each of the services implementing plans for their own sub-campaign, IJO instead relies on a network of units from all services providing a cascade of capabilities required for the joint operation in a flat and short organization lead by the joint force commander.651 Coordination is no longer based on plan coordination, but will be action based and down to the use of individual weapon systems allowing random, initiative-based, mutually interactive and continuous coordination. There would no longer be focus on massing of forces with separate boundaries between services. Boundaries would be blurred, and combat would rely on massing of fire through the integrated network where real-time information is shared.

<table>
<thead>
<tr>
<th>Actor/Structure</th>
<th>Service Boundaries/ Identities</th>
<th>Coordination</th>
<th>Levels</th>
<th>Depth</th>
<th>Time</th>
<th>Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>JO</td>
<td>Individual service / Vertical and tall</td>
<td>Clear</td>
<td>Plan-based</td>
<td>Campaign level</td>
<td>Limited depth</td>
<td>Limited times</td>
</tr>
<tr>
<td>IJO</td>
<td>Networked system / Flat and short</td>
<td>Blurred</td>
<td>Action-based</td>
<td>All levels</td>
<td>All depth</td>
<td>All times</td>
</tr>
</tbody>
</table>

*Table 1. Major differences between JO and IJO, Source: Nan Li, New Developments in PLAs Operational Doctrine and Strategies*652

650) Ibid. pp. 7-8.
651) Ibid.
The level of jointness will deepen as the units and platforms become digitally integrated. In JO, air-land integration is limited due to the separate service concept, which prescribes separation and safe distances between services. In IJO, digital integration and exchange of real-time information, together with precision weaponry, will enable a safer integrated use of forces from all services.

When the JO concept was implemented, focus was on the mechanization of the PLA, emphasizing the acquisition of weapon platforms. However, the change to mechanization and informationization lead to an increased focus on improved long range Intelligence, Surveillance and Reconnaissance (ISR) networked with platforms. This realignment in focus will give the PLA increased depth in their operational and strategic targeting, and will make the PLA a much more capable force, able to attack strategic and operational centers of gravity.

In JO, the service separation meant that joint operations conducted across the services would be limited, not only in scope but also in time. IJO, with its concept of integrated units and platforms, implies that jointness will be a continued basic state of affairs.

In JO, the effect of jointness is mainly felt at unit level. The concept of service separation makes the unit receiving cross service support the beneficiary, and it will improve its ability to succeed its mission. In IJO, where service boundaries are blurred, and units and platforms contribute individually in the system, the effects of joint operations benefit the system as a whole, and not only a particular unit.

Whether this vision for jointness is possible to achieve - or even desirable - is a big question. The description of IJO bears a remarkable resemblance to a multitude of western theoretical literature on network centric warfare, and it describes a level of jointness that is not even achieved in the west. Where the theoretical application of force may seem optimized if one can deliver all effects in a joint system of units and platforms, and at all times across the battlefield, it will also result in a significant battle management task, as well as a gigantic logistical force management task that will dwarf the task of commanding larger units or services. So in reality, there is probably a limit to how small the units can get, to avoid saturation from a logistical management point of view. However, there is no doubt that the implementation of IJO and the focus on informationization will make the PLA a much more capable force, even if the full extent of the vision is not implemented.

**PLA Development of Joint Doctrine**

Chinese joint operational level doctrine “The New Generation Operations Regulations” was issued in January 1999, signed by the then Chairman of the Central Military Commission Jiang Zemin.
It was issued in a series of capstone publications, analogue to the U.S. joint doctrine or U.S. field army manuals. The capstone publications are:\textsuperscript{653}

- The Essentials of Joint Campaigns of the Chinese People’s Liberation Army.
- The Essentials of Army Campaigns of the Chinese People’s Liberation Army.
- The Essentials of Campaigns of the Chinese People’s Liberation Army Navy.
- The Essentials of Campaigns of the Chinese People’s Liberation Army Air Force.
- The Essentials of Campaigns of the Chinese People’s Liberation Army Second Artillery Corps.
- The Essentials of Campaign Logistics and Safeguards of the Chinese People’s Liberation Army.

The fact that a CMC chairman has signed the capstone publications is important. Implementation of joint doctrine is often riddled with friction and resistance, as the inter-service rivalry often causes friction for the joint domain. In the United States, which has developed joint doctrine to great refinement, it took a congressional act\textsuperscript{654} to impose “jointness” on the U.S. Armed Forces. The Chinese equivalent to a U.S. congressional act is Jiang Zemin signing the capstone doctrine. Thereby, he initiated a structured top-down transformation to a joint paradigm, which will have great momentum since it will involve all aspects of the PLA. By developing its joint doctrine early in its modernization process, the PLA is in the unique position that its organizational and technological modernization, its training and professional military education, can be driven by its doctrinal principles, which is an excellent position to be in, since it unifies the transformation. The doctrine is classified and not released outside of the PLA, but from various commentators it is understood that the doctrine supports the general transformation of the armed forces and reflects the operational adjustments that the PLA deem necessary, based on their analysis of recent wars, especially the 1991 Gulf War, but also later wars. It applies to all services and branches, and aims to unify and standardize operational thinking in the PLA. The doctrine is divided into three major types: (1) general regulations, (2) regulations for joint combat between different services, and (3) combat conducted jointly between the various arms and specialties within services. The doctrine encompasses the most critical elements of campaign design, such as guidelines for command and control (relationships, authorities, coordination and architectures), battle space management, force structures, service relationships, sustainment, operational sequencing, and guidance for the employment of military force.\textsuperscript{655}

Chapter 9

PLA Development of a Joint Organization

The PLA has been inspired by both Soviet and U.S. doctrine in creation of its own doctrine, but it is no copy. Neither is its attempt to create a joint organization designed to fight using the joint doctrine. In the U.S. Armed Forces, Joint Combatant Commands656 and Joint Component Commands have been developed for joint execution of synchronized and coordinated land, maritime and air operations. It is a unified and purposely designed organization. The role of the services in the U.S. - the army, the navy and the air force - is to provide forces to the fighting organization. In spite of gathering much inspiration from the United States doctrine, the PLA has not copied this organization, but has created its own version. In times of emergency, a MR headquarter will be appointed as a war zone headquarters. It is an ad hoc headquarter, organizationally based on the structure of the MR headquarter, and it may be augmented or even commanded by officers from higher headquarters in Beijing.657

Until now, all MR headquarters have been commanded by ground force officers. The joint force is commanded by a military commander assisted by a politically appointed commissar. Into this war zone headquarter, the PLA seek to seamlessly integrate the regional Air Force Command, regional Maritime Command (Guangzhou, Nanjing, Jinan MR658), Second Artillery Units, which are subordinate to the CMC, and provincially based, autonomous armed police units, jointly managed by local governments and Beijing headquarters.659 There are several problems with this way of organizing for joint operations.

The PLA is an extremely centralized organization, with MRs and services under firm control of the CMC. There are seven MRs with predetermined geographical boundaries, and in case of a crisis, a temporary operational war zone will be established covering the area of the crisis, crossing existing MR boundaries if required. The advantage of having a permanent war fighting headquarters, like in the United States, is that staff procedures can be optimized, the inherent friction of an organization can be dealt with, and coordination issues determined. A temporary headquarter, on the other hand, using augmenting staff from higher headquarters, will have to learn these lessons during actual crisis planning or maybe even combat. It may take longer time to plan, it may be less efficient in internal coordination of the staff, procedures will be less mature, and some of the staff will be

656)  Examples of U.S. Joint Combatant Commands are U.S. Central Command, responsible for the Middle East, or U.S. Pacific Command responsible for the Pacific area.
658)  Guangzhou, Nanjing and Jinan MR are the only three MR with a PLAN Fleet headquarter. They are located in Zhan Jiang (Guangzhou MR), Dinghai (Nanjing MR) and Qingdao (Jinan MR). Source: GlobalSecurity.org, “People’s Liberation Army – Organizational Structure”, downloaded 28 July 2009, (http://www.globalsecurity.org/military/world/china/plan-org-overall.htm).
less experienced. In addition, the headquarters will be less experienced in working with subordinate units, which may hamper short notice changes to operational plans. The PLA may be in the process of establishing permanent joint headquarters. In February 2009, the PLA announced that the Jinan MR headquarters has been designated as the first theater joint training organization. The organization is composed of representatives of the three services and arms under the GAs, PAP contingents and governments of the Shandong and Henan provinces, the Shandong Provincial Military Command and Henan Provincial Military Command. The task of the headquarters is to study and research joint operations, and to organize service training as well as joint training and exercises.660

The organization of the peacetime MR headquarters mirrors the organization of the Chinese General Headquarters Departments with a headquarters element (operations, intelligence, communications), a political department, joint logistics department and armaments department.661 Having the same organization in peacetime and wartime could seem advantageous, because the staff would know its responsibilities, but the objectives and tasks of a peacetime organization compared to a wartime organization are very different. In peacetime, the task is to build and train, and it is governed by political rule of law and regulations, military administrative rules and budgets. In war time, the purpose of a military organization is planning and execution of military operations. In joint operations, there is a specific requirement to have the necessary competencies from all services available at all stages of the planning and execution process. This is an entirely different task from peacetime management, and it is unlikely that the organization will handle both equally well, and the use of augmenting staff, not familiar with the headquarters, will also be less efficient, unless it is practiced regularly during exercises. The organizational design of the wartime headquarters is crucial to its effectiveness, which in turn is decisive for the conduct of war. Also, service rivalry and competition among the services for resources, which is a part of peacetime struggles, may become a factor in wartime thinking, which could be an obstacle for effective IJO.662

In the past, the MR headquarters have been strongly ground force-centric, and the navy and air force served merely as an adjunct to secure ground force flanks, and their operational art was driven by the ground force mission. For example, the navy deployed more troops on land or islands than on water in support of anti-landing operations, while the air force provided air superiority and limited

close air support or short range interdiction. With a background as ground force-centric as this, it could be a major task to implement jointness.

The challenge of implementing a joint doctrine is not only changing the doctrine and the procedures. The real challenge is in changing the mindset of the soldiers, the officers and the military leadership at all levels. The organizational challenge, which is deemed critical for the PLA, is the extent to which it will be able to create a seamless integration of the services vertically and horizontally and implement the IJO, without compromising their military strength. The proposed solution in doctrinal debates in the PLA is the use of the “Centralized Planning – Decentralized Execution” model, which is a common paradigm in western militaries, though it is not quite the same in the PLA. For the PLA, this means that a service will be appointed a supported command for a certain operation and the other services will be supporting. Different service commands will be given responsibility for different battles, utilizing each service’s expertise in the best possible manner. Rather than achieving proper jointness as described in IJO, this organizational structure is more likely to create parallel coordinated operations between the services, rather than integrated jointness.

The joint headquarter of the warzone is created by using the ground force headquarter of the MR as a joint headquarter with air force, navy and 2nd artillery officers added to the core staff. This way of designing a joint headquarter is likely to keep its ground force focus, with a joint flavor. Only a joint headquarters, with subordinate land, air and naval functional headquarters, organizationally designed in accordance with its joint planning and execution process, and with suitable use of the expertise of the services, will provide a seamlessly functioning joint headquarters. Some analysts in the PLA are suggesting that the PLA gradually will replace service arms with a functional organization as the basis for organizing its forces, as it is seen in the U.S. joint force structure. However, it is this author’s belief that it will take another decade or two of developments of the joint organizational structure, before the PLA will achieve true jointness.

No wartime experience. The joint organizations in the U.S. have been changed several times, in some cases as a consequence of experiences gained in the wars it has fought. War tends to disclose dysfunctional aspects of an organization the hard way, which gives great momentum to change. As the PLA does not have any wartime experiences, organizational change of its joint organization

will be a product of exercise experiences, but the momentum to create change from exercises is far smaller than from wartime experiences. The requirement for changes learned from exercises will have to overcome ground force resistance to giving up its dominance, navy and air force rivalry, personal agendas among generals as well as politically motivated changes required by the CPC. In this environment, it may be hard to optimize an organization optimally for planning and execution of seamless joint operations.

**Training of Military Officers in Joint Operations**

If the PLA is going to overcome the resistance of service culture and parochialism against the implementation of joint doctrine, then strong measures have to be adopted, especially when it comes to education and training in jointness, which is important to ensure the transition. The PLA seems to have understood that. The PLA has designated the training of military officers in joint operations as a strategic task, which has been advanced by President Hu Jintao himself. Accordingly, implementation of joint operations through education and training has been given the highest priority. The PLA is still in its infancy when it comes to implementing joint doctrine, and the overall ranks and capability of the commanders and staff officers is still far short of what is required for joint operations. The PLA General Headquarters/Departments has taken the lead by issuing four policy documents for further promoting the cultivation of commanders of joint operations.

- The measures for further boosting the cultivation of commanders for joint operations.
- The model for cultivating the core quality and capability of commanders for joint operation (for trial implementation).
- The opinions on the implementation of the instructor system in military institutions.
- The opinions on enhancing joint operation teaching materials in military institutions.

The PLA General Staff Headquarters has issued a revised Outline Military Training and Evaluation effective from January 1, 2009. The outline has two major aspects, namely joint training and individual service training. The focus is to enhance the joint operations capability of the forces by outlining training requirements from unit level all the way to the joint operational level.

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668) Ibid.
Chapter 9

The PLA National Defense University (NDU) has set up three joint operation training centers for practical training of commanding officers from different service combat units. The curriculum encompasses command, maneuver and assembly, battle organization and battle execution and parallel operations. It is hard to assess the level of jointness in the limited information that is provided, but the fact that the NDU, the highest military educational institution, has taken the lead in joint education and training, is an indication of the priority it has been given.

Also, in 2008 the PLA University of Science and Technology started a series of new joint courses such as *Basic Knowledge of Joint Operations, an Introduction to International Law, and An Introduction to Military Strategies*. The courses have become essential teaching requirements at basic military educational institutions, and will be taught in all military institutions in the PLA.

Transferring officers to other services is being discussed. It is seen as important, though only small steps have been taken. Cross-service exchange of officers has been introduced, and it has been recommended that officers are given a 6 months preparation course at the NDU prior to their transfer. However, this is still far from the rules that were introduced in the U.S., where joint service is mandatory for a career officer. There is no information about the PLA having gone that far. At the Nanjing Army Command College, joint teaching and training has been introduced, but rather than transferring officers from the Air Force, Navy and 2nd Artillery to the Command College, a long distance online teaching capability has been established, so that experts from the Air Force, Navy and 2nd Artillery can teach from remote locations. Even though the curriculum may be taught this way, it cannot compensate for the effect of officers from different services working together, overcoming the service barriers.

**Joint Training and Exercises**

Training in the PLA has gone through significant changes over the course of the past decade. In the past, PLA units would exercise and rehearse a pre-planned scenario, and joint exercises were rare. Exercises in general were few, they were single service, pilots would only fly a limited number of flying

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hours, and naval ships would have a limited number of days at sea. However, the PLA has implemented dramatic changes to their training and exercise program in recent years, seeking to improve its warfare capabilities. PLA units are exercising more frequently, both single service and joint exercises. Pilots are allocated more flying hours. Flying training is much more realistic, including large force employment of dissimilar types of aircraft in different supporting roles. Tactical command authority has moved from ground based intercept controllers to airborne mission commanders, adding to complexity and the dynamics in training. Exercises in general are more realistic with increased complexity and difficulty. Electronic warfare, jamming of radios and use of electronic countermeasures is a normal training issue during exercises. All services are using “confrontational exercises”, which are non-scripted exercises in which Red and Blue forces train against each other. This is likely to encourage commanders to make decisions and take initiative. Reports even indicate that exercises are designed in such a way that units are forced to deviate from their plans. PLA units are exercising far away from their home region, moving entire units over long distances in order to improve war preparation and ability to maneuver. The PLA change of focus from mechanization to informationization is also reflected in training and exercises. Units are being networked across the branches and services, and real-time information is exchanged between the services and units, allowing rehearsal of joint and combined fire-coordination procedures. Only a limited number of units have this capability so far, but more and more units can be expected to get these capabilities with time. Digitalization and networking of units is also used in the context of training. The PLA are developing simulators to enable cheap training. They include aircraft simulators, tank simulators, ship simulators etc. As the PLA has just begun the use of simulators, they are probably not as advanced as in the western countries, but the PLA is likely to improve the quality of the simulators over time. Simulation is also used to train commanders in computer assisted war games and command post exercises.

In order to facilitate better overall training levels, the PLA has formally promulgated new training requirements and evaluation standards, covering joint exercises and training, service training, combined training, unit training and individual training of soldiers. It has a new capability-centered training standard and appraisal system and evaluation standards, and is covering all aspects of war fighting, including information warfare, simulation, day, night and all weather training. It also specifies training in difficult environments such as coastal areas, high altitude training in mountain areas and training in desert warfare.

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675) In China, Red forces are friendly forces and Blue are opposing forces, which is opposite to NATO procedures.
Joint Campaign Planning, Strategy and Targeting

PLA theory has three levels of armed conflict. The highest is “war”, the middle level is “Campaign level” and the lowest is “combat operations”, not too dissimilar from the western theory of strategic, operational and tactical levels of war. It is at the campaign level that the military commanders seek to achieve the war objectives in accordance with the strategic guidance given by the political leadership. The campaign will be fought based on a document known as “Theater Principles”, containing guiding thoughts for the campaign, a discussion of strategic and operational adversaries and the enemy’s intent and capabilities. It will also include a discussion of the desired end state and objective of the campaign. Based on this, the joint campaign commander will issue a “Campaign Resolution”, which outlines how the commander intends to achieve the objectives given to him. It outlines the enemy’s probable course of action and discusses his strengths and weaknesses, command and control structure and relevant weapons systems. It provides an overview of the friendly situation, defines campaign objectives, own courses of action and operational methodologies, logistics plans and a general targeting plan. This way of planning is very similar to western methodology for planning military operations. It is an effective analytical way of approaching an extremely complex task, involving many agencies, services and forces, often with conflicting interests. It is a general analytical framework for planning that will enable military planners to plan for any military contingency on short notice, as opposed to specific planning for a particular military operation, such as a Taiwan operation, which already in peacetime can be planned in great detail.

In 1999, the PLA revised its doctrine and issued a new fighting regulation for how to fight “Local War under Modern High Technology Conditions.” The fighting regulation has not been published, but the National Defence University of the PLA published a book entitled Zhanyi Xue, or “On Military Campaigns”, which has been used as a text to instruct PLA officers in their new doctrine. This text prescribes that operations will be fought jointly under a unified commander, and that operations will be divided into phases, where each phase will have its tasks to be accomplished, terrain to be taken or time to be gained. Very similar to western military campaign plans. The text incorporates ten “Basic Principles of Military Campaigns”.

678) Ibid.p.238.
680) Ibid.
1. *Know the enemy and know yourself.* As a campaign commander, one must be fully in command of the enemy’s conditions in various aspects, as well as those of one’s own.

2. *Be fully prepared.* Campaign preparation consists of peacetime preparation and advance combat preparation. Peacetime preparation is the foundation upon which war is fought, while advance preparation is critical to the war at hand.

3. *Be proactive.* The PLA will seek to be proactive in offensive as well as defensive operations. One must take full advantage of one’s superiority and strengths to focus on the struggle for the control of some key areas. The PLA can fully realize and utilize favorable factors in the theater in such areas as politics, economy, diplomacy, culture, and geography, and it can flexibly adapt operations and tactics in the execution of the campaign.

4. *Concentrate forces.* Concentration of force to strike the enemy where he is weak. The PLA thinking also includes the concentration of effect by the concentration of fire using long range weaponry.

5. *In-depth strikes.* Simultaneous strikes against the full depth of the enemy campaign. One should attack the enemy’s first echelon and at the same time hit his follow-up echelons, important in-depth targets, the enemy’s rear and its command system. In terms of targeting, one should pick vital but fragile targets for the purpose of crippling or paralyzing the overall structure of the enemy’s operational system. Such targets should include the enemy’s command system, rear support system, airports, ports, transport and communication hubs, high tech weapon platforms, heavy troop concentration and important battlefield facilities.

6. *Take the enemy by surprise.* One must attack the enemy at times and places that he does not anticipate, and if necessary use unconventional combat methods. Under modern conditions it is difficult to sustain surprise, which is why one must move quickly to exploit the initial battle success.

7. *Unified coordination.* Coordination of various combat forces, combat methods and combat operations under a unified command, based on unified objectives, planning, macro-control and cooperation. Macro-control in this context implies that authority will be delegated.

8. *Continuous fighting.* One must be able to carry out sustained combat operations and execute non-stop, consecutive operations.

9. *Comprehensive support.* Refers to a series of support measures to ensure the smooth execution of a campaign. It includes operational, logistic and equipment support.

10. *Political superiority.* A modern military campaign is a trial of strength in terms of military and economical power as well as political and spiritual power. Victory depends on two factors – man and weaponry combined with spiritual power can turn into tremendous fighting capabilities.
Chinese strategy and air power theorists are heavily influenced by air campaign theorists from the United States, and by the performance of the U.S. armed forces during the two Gulf wars and the 1999 air war over Kosovo.\textsuperscript{681} The American air power theorist Robert A. Pape has provided definitions for various strategies, but the definitions can be used in a joint context as well. These definitions are also used in the Chinese debate, which shows the influence of American theory. Robert A. Pape has identified the following strategies for the conduct of warfare.\textsuperscript{682}

- **Brute force.** Objectives will be achieved through brute force, seeking annihilation and total destruction with no consideration as to whether the opponents wish to continue the fight or not. This strategy can be very costly.

- **Coercion.** When using a coercive strategy, one seeks to affect the behavior of an opponent by manipulating cost and benefits of continuing the fight. It involves persuading an opponent to stop an ongoing action or to start a new course of action, because the expected price of continuing the present course of action is too high. Coercion is often attractive to political leaders, as it promises a cheap victory with less destruction. Coercive strategies are, however, difficult to apply, as it is difficult to predict when the opponent will give in, and it is easy to overestimate the effect of the military operations on the opponent. There are four fundamental coercive strategies that can be applied to coerce the opponent:
  
  - **Punishment.** Coercion by punishment operates by raising costs or risks to civilian populations, destroying expensive infrastructure or killing military personnel in large numbers to exploit casualty sensitivities of opponents. Mainly strategic targets are struck.
  
  - **Denial.** To prevent the opponent attaining its political objectives or territorial goals through the use of military means. Targets are struck at the tactical, operational as well as the strategic level if they support military operations.
  
  - **Risk strategy.** A subset of the punishment strategy, originally developed by Thomas B. Shelling during the Cold War in 1966.\textsuperscript{683} The Risk strategy is based on the threat of destruction and that the expected costs of this will change the will of the opponent. Assets that are already destroyed have no value, whereas the prospect of losing existing assets has value. It involves a gradual escalation in intensity or geographical area.

\textsuperscript{682} To read the full text of Robert A Pape’s strategy definitions read chapter two in Robert A. Pape, “Bombing to Win; Air Power and Coercion in War”, Cornell University Press, 1996, pp.12-54.
Decapitation. A strategy closely associated with Colonel John A. Warden III, who was one of the principal architects of the 1991 Desert Storm air campaign. The decapitation strategy focuses on targeting the opponent key leadership and its ability to communicate with its forces. Attacking the leadership is the direct way to affect the opponents decision calculus. The assumption is that these targets are a state’s Achilles heel, and regardless of a states strength, if the leadership is knocked out, the whole house of cards comes down, which will cause a change of will. This strategy is closely linked to the strategy of Strategic Paralysis, also developed by Colonel John. A. Warden III.

- Deterrence. The attempt to dissuade an opponent from taking an action not yet initiated, by demonstrating that the costs or risks of that action outweighs the benefits. It discourages implementation of a particular policy through fear of the consequences. Often used in the context of nuclear deterrence, but conventional deterrence can also happen.

“The Science of Military Strategy”, which is the main doctrinal book at the NDU of the PLA, states that there are four main directions and groups of targets of a strategic offensive at the overall level:

- The political and strategic leadership of the opposing side. This strategic direction involves “Wrecking the opposing sides’ ruling foundation, shocking the people’s aspirations and damping down its troops morale, causing the opposing side to lose its will of continuing the war.” These are coercive strategies which involve the category of punishments and decapitation.

- The major economic region of the other side, which involves “wrecking the war economic basis and war potential of the opposing side and taking its strategic resources.” This is a coercive punishment strategy, which is probably inspired by the U.S. strategic air offensive during World War II, which focused its strategic bombing campaign on the German economic centers.

- The major enemy military groups and organizations. “By surrounding and annihilating major enemy groups, the attacker can weaken or deprive at the root the combat capability of the opposing side and cast a decisive significance on the war situation.” This direction is similar to the coercive denial strategy, as well as a brute force strategy.

686) Ibid. p. 278.
687) Ibid. p. 278.
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- Geographically disadvantageous areas of the opposing side. These areas are generally unsuitable for the movements of large troop formations, and are therefore usually weakly defended areas. Commencing the strategic offensive from such direction is the easiest way to achieve the surprise effect.  

The above directions are interesting, because they are a testimony to how much the Chinese strategists have adopted from western war theory, even though they are only general theoretical possibilities as to how a war can be focused. The PLA targeting guidelines written in the “On Military Campaigns” seem to be more precise, with a focus at the operational level, which holds the strength of the enemy’s military capability, and strategic targets will be targeted to the extent that it supports the operational level combat power. This matches the third bullet above, and is the equivalent of Robert A. Pape’s denial strategy, which is focusing on preventing the enemy from achieving his objectives through the use of military force.

An example of how Chinese military theorists are thinking about warfare can be seen from public discussions among prominent PLA political analysts, regarding which strategies to use in the context of a conflict over Taiwan. The trend in the discussion is that the analysts prefer coercive strategies, where the opponent gives way while he still has the power to resist, because the expected cost of continued resistance is too high. They think a coercive approach will offer the least international repercussions as a result of using force against Taiwan to achieve limited political objectives. Brute force strategy of physical occupation to achieve unification is considered too costly, creating a quagmire of problems, including long term occupation, insurgencies, and a hostile international community.

There is an ongoing debate in Chinese literature and on debate forums over what coercive mechanisms to use in a Taiwan crisis, which shows that the PLA is evaluating and debating various coercive strategies, such as maritime and air blockades or a comprehensive air campaign as seen in the Kosovo war. There does not seem to be a consensus as to what mechanism to use, as there is no optimal model. Some prominent PLA strategists, such as Lieutenant General Mi Zhenyu, advocate a punishment strategy by bombing Taiwanese economic infrastructure. Others at the National Defence University talk about a blockade to deprive Taiwan of the ability to wage a protracted war. Some advocate a gradually escalating campaign, initially targeting military targets, and if that does not work, then the strategy will turn to bombing strategic targets, such as oil depots, electric power plants and

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690) Ibid, p. 278.
693) Ibid, p. 228.
694) Ibid.
transportation networks. An increasingly vocal faction advocates targeting the Taiwanese leadership to induce strategic paralysis, but most favor a denial strategy by targeting the Taiwanese military ability to defend the country, and thereby compel the leadership to abide by Beijing’s demands.

**PLA War Fighting Characteristics**

Research into the PLA historical use of war fighting tactics will show a propensity towards a certain set of characteristics:695

- The use of deception and surprise whenever possible, with the achievement of surprise being sought at the politico-military strategic level, at the campaign level and the tactical unit level;
- A preference for mobile operations and maneuver, and a distaste for static point defense;
- The primacy of offensive operations over defensive operations;
- Focus on battles of annihilation – the destruction of enemy combat units is preferable to seizing and holding terrain;
- The employment of superior force, both in firepower and numbers, and the selected point of attack is usually the enemy’s weakest point;
- Massing of artillery fires to achieve shock value as well as destructive power;
- Predilection for night fighting and night time movement of forces.
- A general toughness in battle and a willingness to absorb heavy losses, when deemed necessary.

**Firepower Warfare**

The joint campaign commander is responsible for the execution of what is known as the concept of “Firepower Warfare”, which is related to aerospace operations and joint campaign theory.696 Firepower warfare is managed at theater level and involves the employment of strike aviation, theater missiles and long range artillery with the objective of striking enemy strategic and operational targets to alter the military situation and potentially determine the outcome of the conflict by destroying the enemy’s warfighting capability. The mission of Firepower warfare is to conduct air strike and theatre missile operations against targets in the enemy’s rear area, supported by information operations, to create the conditions necessary to attain the strategic and theater objectives. This includes the achievement of information dominance, air superiority and sea control, which is fundamental to bring the conflict to cessation on Chinese terms.

Centralized Command Versus Field Autonomy

The PLA concept of whether to centralize operations or delegate authority to the commanders in the field has changed over time. In the early days of the PLA between 1930 and 1949, commanders in the PLA enjoyed a high degree of autonomy, mainly due to the vast distances and a shortage of communication means which prevented centralized control. The autonomy in operations gave the military commanders great experiences and ability to command, which by the end of the civil war led to the creation of a group of very experienced and capable military commanders. However, this would soon change. The CPC ascent to power led to a political centralization of power, which affected the PLA as well. Chairman Mao knew that to stay in power he needed to keep tight control of the PLA, and this would have great influence on the PLA during the ensuing war in Korea. Chairman Mao not only exercised tight political control with the military operations, but he would also give detailed tactical directions to military commanders in the field, often with disastrous consequences. Mao created separate land and air war headquarters subordinate to the CMC, ensuring that the CMC would be the focal point for coordination of air and land operations. Mao often lacked first hand information from the field, and he allowed political considerations to overrule military realities, much to the frustration of his military commanders. The tight, centralized control carried on after the Korean War, during the first Taiwan Strait crisis in the 1950’s.

However, during the Chinese war with India in 1962, there was a significant change in the command philosophy. Chairman Mao maintained centralized political control with strategic direction and policy making, whereas commanders in the field were granted a high degree of flexibility in operational and tactical command.

It is hard to assess whether the PLA in future wars will decentralize or centralize command authority, because at the end of the day it depends on the commander in charge. “The Science of Military Strategy”, which is the main doctrinal book at the NDU of the PLA prescribes that “the most fundamental feature of centralized unity of command is the unity of strategic command authorities and the command relationships”. However, it also emphasizes that “centralized unity of command does not necessarily mean that the strategic commander and the commanding authorities can interfere in and even run the whole show of his subordinates command. In the course of conducting the strategic command, the strategic commander and the commanding authorities should permit and

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encourage (authors emphasis), under the prerequisite of not infringing in the overall strategic intention, the junior commanders to give full play to their subjective initiative and creatively fulfill their operations tasks. Under emergencies, the junior commander should be given the authority to make prompt decisions and act according to circumstances.”

There is a very strong culture of centralization in the PLA, but the current changes that are taking place in the ground force, navy and air force organization at the operational and tactical level all point towards a decentralization of command authority. The ground force has empowered the battalion commanders by making them combined arms commanders, and the air force is developing airborne mission commanders rather than controlling air operations from the ground. These changes point towards a deliberate delegation of authority, a move which in the west has improved combat efficiency if the officers in charge at lower levels are ready to take the responsibility.

**Information Operations, Cyber Warfare and Computer Network Attacks**

The PLA has for years been planning for a conflict over Taiwan, and if a Taiwan conflict were to erupt, the PLA would ultimately face the daunting prospect of having to fight the armed forces of the U.S. For that reason, the PLA has been developing asymmetric capabilities to improve its strength, and to target what it sees as critical vulnerabilities of the United States armed forces. One such potential vulnerability is the U.S. dependence on information networks and public information, and the PLA has for that reason developed a concept for Information Operations, cyber warfare and Computer Network Operations. The PLA has established information warfare units to develop viruses to attack enemy computer systems and networks. They have also developed tactics and measures to protect friendly computer systems and networks. Computer Network Operations have been an integrated part of PLA exercises since 2005, practicing first strikes against enemy networks.

**Informationization**

With the adoption of “Local War under Modern Informationized Conditions”, the PLA has embarked on a long term project of creating a network that will digitally link command and control systems, information and reconnaissance assets with weapons platforms, which will provide a high level of

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700) Ibid.
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situational awareness for the operational commander as well as at the tactical level. It will increase tactical responsiveness and the ability to prevail on a very dynamic battle field. It is a long term project that will evolve over the next decades.

The PLA informationization program will go through several stages, and can be expected to be a fully functioning network by 2020. The PLA is in the progress of networking its forces across the MRs, which is what the PLA call a “trans-area systems integration”. It involves PLA-wide networking of administrative systems in barracks, air bases and naval bases, as well as their operational systems, linking up to command information systems. Progress has been made in the building of a command information system for IJO, significantly enhancing the capability of battlefield information support. Currently, the PLA is building new systems to which they desire to connect their weapon systems. New weapon systems will be built in accordance with the digital standards of the network system. However, when it comes to legacy platforms, which were originally not designed to be networked, things will prove more difficult. The PLA is networking several of their legacy weapon systems, boosting the utility of systems that would otherwise have been more or less redundant. Main battle systems are gradually being informationized, and the focus of the PLA is to improve the sensor to shooter loop, which consists of:

- a rapid detection capability of enemy systems,
- a precision geographical locating ability of these targets,
- a friend or foe identification ability and
- a precision strike capability,

These systems will all be linked into one network. The network will reach its full potential when joint command and control software is linked with modern platforms, which are designed to the specifications of the network standards, and thereby become central nodes in the network. The PLA version of network centric warfare is certainly inspired by the United States, but it is unlikely to be an outright copy of what the U.S. armed forces have created. The Chinese historic tendency for centralized control, and for controlling the distribution of information, is contradictory to the network information sharing philosophy of the U.S. Armed Forces. Nevertheless, all information points towards the creation of a network which will be a joint force multiplier that will raise combat

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capabilities of the PLA to a new level. The PLA is able to collect intelligence information about the
enemy from satellites, aircraft, unmanned aerial vehicles and air defense radars and fuse it into
a joint intelligence database. Their sensors are likely to be less sophisticated compared to similar
systems from the United States and most importantly, the PLA does not have a sensor equivalent
to the U.S. JSTARS, which is capable of creating a ground picture of enemy forces based on radar
information. There are no indications that the PLA has acquired or is in the process of acquiring such
a sensor yet. That means that the information database which the PLA can create about the ground
situation, compared to the United States, is far less detailed and not in real-time. It is likely that the
PLA will seek to develop a JSTARS equivalent capability. Based on the information the PLA is able to
collect, they have created a joint reconnaissance and early-warning network by integrating assets
from all services to create a 3-dimensional reconnaissance picture.\footnote{706} They can create 3-dimensional
digital mapping from digital data obtained by aerial reconnaissance platforms,\footnote{707} which will improve
their ability to plan for contingency operations.

Within the services of the PLA, the ground force has prioritized informationization of army aviation
and mechanized units, whereas the navy has prioritized the development of a combat information
system on their ships, linking it with the joint network and new weapon systems.\footnote{708} For the PLAN it
is a long term project, as part of a long term gradual effort to enhance its overall maritime fighting
capability. The PLAAF is prioritizing the creation of an information-based air control and air defense
network for combat operations. They have used information networks to enhance their strategic
maneuver and logistics support capability. The Second Artillery Corps has developed a network-
based command and control system, early warning detection system, navigation and positioning
system, information combat system, and has thereby boosted its nuclear counterattack capability as
well as its conventional attack capability.

The informationization process is at the very core of PLA development, and is crucial for the leapfrog
development into IJO, which in the time to come will make the PLA a very potent fighting force.

\textbf{Joint Command and Control}

To support a potential Taiwan operation, the PLA started the development in the late 1990’s of
a theatre-level command, control, communication, computers, intelligence, surveillance, target-
acquisition area reconnaissance (C4ISTAR) system covering Taiwan, the surrounding maritime area and the Nanjing and Guangzhou MR. The system is also known as Project 995 or “Qu Dian”. It is an automated, satellite based joint battle management system developed from early versions of the PLA AIR integrated Air Defense Command and Control System (ADCCS). The PLA has launched a series of communication, data, meteorological, imaging, mapping, and navigation satellites to support the Qu Dian system. In recent years, the PLA Daily website has published several articles about the PLA developing a joint C4ISR system, but with no reference to the Qu Dian system. E.g. in November 2008, the PLA reported that the 1st Amphibious Mechanized Division of the 1st GA, Nanjing MR was experimenting with a joint information sharing platform that would integrate ground force field communication with tactical interconnected networks and the satellite communications network. The system created connectivity between theater commander and the ground force at corps, battle group, battalion and company level, encompassing armored vehicles, artillery, reconnaissance, air defense, and army aviation units. This system was used to coordinate an amphibious operation by providing connectivity to naval and air units. Even though there is no reference to the Qu Dian system, it is likely that these systems either are, or will be, connected, and thereby provide real time information to improve the joint C2 capability at all levels. The system will provide connectivity throughout the PLA from CMC level down to the individual soldier. During exercise Northern Sword 2007, the PLA experimented with equipping soldiers, tanks and other vehicles with digital monitors that provided situational awareness to the soldiers, and at the same time relayed data about the battlefield conditions and information on casualties, food, ammunition and supplies back to the headquarters.

Developing software and hardware for a joint C4ISR system of this nature is a very complex task. It will take a long time, and the PLA system is probably still in its infancy. There may be many issues that need to be resolved, but with another 10-15 years of development, the Qu Dian system may become a very effective joint force multiplier that will enable the PLA to provide effective joint command and control. At the same time it must also be said that the PLA is developing a dependency on communication and data exchange similar to the dependency western militaries have. It is a key vulnerability that can be exploited by enemies. The Chinese have been seeking to exploit these vulnerabilities against the U.S. armed forces in their planning for a Taiwan operation,

and it must be assumed that the PLA is taking this into consideration when designing their own system, ensuring redundancy and protection of the C4ISR system.

The system is dependent on satellite connectivity, and so far China has only launched communication and data satellites that cover a limited area. It is therefore not possible, at this moment in time, to use the Qu Dian system beyond the region. To acquire a beyond region capability, a large number of satellites will be required to provide communication, data exchange, meteorological information, imaging, mapping and navigation.

**Summary on Informationization and Joint Doctrine and Training**

Implementation of a joint doctrine for IJO and a joint organization is a long process. The United States started the process of developing joint doctrine and a joint organization in 1988, and not until 2003 - 15 years later - did they fight a war in which jointness was predominant. The PLA has just begun the process, and it will inevitably take a long time. Service resistance and rivalry will have to be overcome, and for that reason only a top down implementation process will be able to succeed. The PLA seems to have grasped that. Directives and regulations for the development of joint doctrine and joint training have been issued, and the process has started. The PLA has not yet developed an independent war fighting organization, but has chosen to utilize the MR ground force headquarters as the war zone headquarters. A joint C4ISR system is being developed to support the new joint war fighting organization. It is based on the Qu Dian command and control system, which is being expanded significantly to include all levels of command and all services, in order to provide battle management and logistical support. It is a daunting task to develop such a system, and its development is likely to take many years. Overall, it can be concluded that the PLA has initiated a serious attempt to incorporate its own version of the U.S. joint doctrine, which for the U.S. has been very successful. Whether the PLA can be equally successful remains to be seen, but it is likely that it will improve the PLA war fighting capabilities significantly.
China’s Nuclear Deterrence

With the help of the Soviet Union, China developed and tested its first 25 kilotons nuclear weapon in 1964, and 32 months later, in June 1967, China detonated its first hydrogen bomb. Since then, China has upheld a limited stockpile of nuclear weapons as deterrence against nuclear attack on China.

This chapter will mainly focus on the overall strategic issues of China’s nuclear deterrence, as the book mainly focuses on the conventional capabilities of the PLA. If the reader desire further information on China’s nuclear forces then read Mark Stokes’s “China’s Strategic Modernization: Implications for the United States”713, Larry M. Wortzel, “China’s Nuclear Forces: Operations, Training, Doctrine, Command, Control and Campaign Planning”714, and Hans M. Kristensen, Robert S. Norris, Matthew G. McKinzie, “Chinese Nuclear Forces and U.S. Nuclear War Planning”.715

China’s Nuclear Doctrine – a Credible Minimum Deterrent

The overall aspects of China’s nuclear doctrine are described in the 2008 white paper on China’s National Defense.716 It states that the purpose of China’s nuclear weapons is to deter other countries from using nuclear weapons against China, and for conducting nuclear counter attacks. Chinese leaders have for decades stated that China’s nuclear weapons are for the prevention of blackmail and coercion by other nuclear powers, particularly the United States and the Soviet Union. These statements and the nature of China’s small and relatively unsophisticated nuclear force structure

have led most analysts to conclude that China has a policy of “minimum deterrence.”\textsuperscript{717} There are a number of self-imposed existential constraints on China’s nuclear doctrine:\textsuperscript{718}

- China has pledged a No First Use (NFU) of nuclear weapons, which is also applied to Taiwan. Western analysts have often expressed doubts as to whether China would maintain its NFU policy, but China has officially remained consistent and not deviated from its NFU policy. In China there is an open debate among civilian strategic thinkers, younger military officers, and the older leaders of the PLA on the utility of the NFU policy.\textsuperscript{719} There is also increasingly a view in the debates, that ballistic missiles are a final trump card in a conflict. It is important to follow this debate as it sows a seed of doubt, as to whether China will maintain its NFU policy if it in a conventional conflict comes under pressure.
- China has provided an unconditional negative security assurance, which means that China has pledged to not use nuclear weapons against non-nuclear states.
- China participates in several nuclear weapon free zone treaties in Latin America, the South Pacific, Southeast Asia and Africa, which prohibits China from deploying, using or threatening to use nuclear weapons in these regions.
- China has pledged that it is not targeting the US or Russia with its nuclear weapons in peacetime.
- China has agreed to a moratorium on nuclear testing and has signed – but not ratified – the Comprehensive Test Ban Treaty, which prohibits China from conducting nuclear weapons tests or other nuclear explosions, and constrains the qualitative improvement of existing types of nuclear weapons.\textsuperscript{720}

China’s nuclear deterrence is currently provided by the 2\textsuperscript{nd} Artillery Corps, which is under the direct command and control by the CMC.\textsuperscript{721} It is mainly responsible for deterring other countries from using nuclear weapons against China, and for conducting nuclear counterattacks and precision strikes with conventional missiles. The 2\textsuperscript{nd} Artillery Corps is also responsible for the use of conventional ballistic missiles in conventional warfare, and the PLA has developed a substantial conventional tactical ballistic missile capability. The Taiwan Ministry of Defense assess that Taiwan are within reach of 1,300 conventional ballistic missiles deployed by China.\textsuperscript{722}

\textsuperscript{718} Ibid.
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China’s NFU of nuclear weapons means that China’s nuclear weapons are exclusively for counterattack, which requires that China has a credible second strike capability. China’s nuclear deterrent force uses a “Countervalue” strategy, targeting key centers of value to the opponent, such as population centers. Even though China finds its nuclear deterrent important, China has historically maintained its nuclear forces at a very low alert state, or at no alert at all.\textsuperscript{723}

\textbf{Nuclear Warheads}

China does not declare how many nuclear warheads or missiles it has deployed, and there is a severe shortage of transparency on this issue. Historically, China has only had a small number of ground launched missiles, which makes it harder to maintain a second strike capability, as the small number makes it easier to keep track of them. By maintaining uncertainty about the real number of nuclear weapons in China’s inventory, China has kept its opponents in uncertainty as to whether they are tracking all missiles. Uncertainty prevents opponents from being confident in their ability to target all of China’s nuclear warheads simultaneously, and the uncertainty is what creates the perception of China having a credible second strike capability.

The US Defense Intelligence Agency (DIA) tries to assess how many missiles and how many nuclear warheads China has. In 2008, the Pentagon assessed that China’s nuclear arsenal in 2008 was around 180 warheads, which is an increase of 25% from 2006.\textsuperscript{724} The increase is believed to be due to the deployment of new ballistic and cruise missiles. Pentagon assesses that a part of the increase can be expected to be offset by retirement of older liquid fueled missiles over the next several years. This number of warheads is still small compared to other nuclear powers in the world:


China’s Nuclear Deterrence

<table>
<thead>
<tr>
<th>Country</th>
<th>Warheads</th>
<th>Non-strategic warheads(^{725})</th>
<th>Non-deployed systems(^{726})</th>
<th>Total nuclear arsenal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russia</td>
<td>3,113</td>
<td>2,079</td>
<td>8,800</td>
<td>~14,000</td>
</tr>
<tr>
<td>United States</td>
<td>3,575</td>
<td>500</td>
<td>1,260</td>
<td>~10,500</td>
</tr>
<tr>
<td>France</td>
<td>300</td>
<td></td>
<td></td>
<td>300</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>-160</td>
<td></td>
<td></td>
<td>-160</td>
</tr>
<tr>
<td>China</td>
<td>&gt;125(^{728})</td>
<td></td>
<td></td>
<td>&gt;125</td>
</tr>
<tr>
<td>Israel</td>
<td>-80</td>
<td></td>
<td></td>
<td>-80</td>
</tr>
<tr>
<td>Pakistan</td>
<td>-60</td>
<td></td>
<td></td>
<td>-60</td>
</tr>
<tr>
<td>India</td>
<td>-50</td>
<td></td>
<td></td>
<td>-50</td>
</tr>
<tr>
<td>North Korea</td>
<td>&lt;10</td>
<td></td>
<td></td>
<td>&lt;10</td>
</tr>
</tbody>
</table>

*Table 1 World nuclear arsenal 2009, Source: Carnegie Endowment for International Peace.\(^{729}\)*

China’s Ballistic and Cruise Missiles

China has developed a number of ballistic missiles that are designed for either a nuclear or a conventional role. The 2nd Artillery Corps, which is responsible for the nuclear weapons, is also responsible for launching conventional ballistic missiles. This mix up of conventional and nuclear missiles makes it harder for foreign intelligence services to track the nuclear missiles, and contributes to the uncertainty about China’s nuclear capabilities.

In 2006, the US Department of Defense believed that China had 793 to 916 ballistic missiles, and of these 83 to 126 are thought to be nuclear capable.\(^{730}\)

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\(^{725}\) The term “non-strategic” relates to US-Russia nuclear disarmament, and refers to warheads with a shorter range than strategic warheads.

\(^{726}\) Warhead held as spares, in an inactive reserve, or awaiting dismantlement.

\(^{727}\) Warheads removed by the US Central Administration in 2007 after a declaration to reduce its nuclear arsenal by 50%. The stockpile is awaiting the move to central storage by 2012, and dismantlement by 2023.

\(^{728}\) Estimates on China’s nuclear forces have generally been derived from the US Department of Defense report on Chinese military power in 2008. This is not consistent with a Pentagon report saying China has around 180 warheads.


When categorizing ballistic and cruise missiles, the following terminology is used:\textsuperscript{731}

- **SRBM**: Short Range Ballistic Missiles, < 1,000 km
- **MRBM**: Medium Range Ballistic Missiles, 1,000 – 3,000 km
- **IRBM**: Intermediate Range Ballistic Missiles, 1,000 – 5,500 km
- **ICBM**: Intercontinental Ballistic Missile, > 5,500 km
- **SLBM**: Submarine Launched Ballistic Missile. Any missile launched from a submarine, regardless of range.
- **LACM**: Land Attack Cruise Missile. Unmanned, armed aerial vehicle designed to fly at very low levels and attack a fixed or mobile ground based target. Can be launched from any platform. Can carry conventional or nuclear warheads.
- **ASBM**: Anti-Ship Ballistic Missile. Ballistic Missile used to target maritime vessels at sea. The missile has a guided re-entry vehicle enabling precision attack.

**Short Range Ballistic Missiles**

China has a substantial inventory of SRBM, which are mainly used in a conventional role without nuclear warheads. The 2\textsuperscript{nd} Artillery Corps have deployed more than a 1300 SRBM and cruise missiles in areas opposite Taiwan, where they are deployed to put pressure on the Taiwanese government.\textsuperscript{732} China has the following SRBM in her inventory:

<table>
<thead>
<tr>
<th>Chinese name</th>
<th>NATO name</th>
<th>Class</th>
<th>Deployment mode</th>
<th>Warhead</th>
<th>Fuel</th>
<th>Maximum range km.</th>
<th>Number of launchers</th>
</tr>
</thead>
<tbody>
<tr>
<td>DF-15</td>
<td>CSS-6 Mod 1</td>
<td>SRBM</td>
<td>Road-mobile</td>
<td>C possibly N</td>
<td>Solid</td>
<td>370</td>
<td>200+ mobile launchers</td>
</tr>
<tr>
<td>DF-15</td>
<td>CSS-6 Mod 2</td>
<td>SRBM</td>
<td>Road-mobile</td>
<td>C possibly N</td>
<td>Solid</td>
<td>550+</td>
<td></td>
</tr>
<tr>
<td>DF-15</td>
<td>CSS-6 Mod 3</td>
<td>SRBM</td>
<td>Road-mobile</td>
<td>C possibly N</td>
<td>Solid</td>
<td>450+</td>
<td></td>
</tr>
<tr>
<td>DF-11</td>
<td>CSS-7 Mod 1</td>
<td>Conventional SRBM</td>
<td>Road-mobile</td>
<td>C</td>
<td>Solid</td>
<td>185</td>
<td></td>
</tr>
<tr>
<td>DF-11</td>
<td>CSS-7 Mod 2</td>
<td>SRBM</td>
<td>Road-mobile</td>
<td>C</td>
<td>Solid</td>
<td>370</td>
<td></td>
</tr>
<tr>
<td>DF-7</td>
<td>CSS-8</td>
<td>SRBM</td>
<td>Road-mobile</td>
<td>C</td>
<td>1\textsuperscript{st} Stage: Solid 2\textsuperscript{nd} stage: Liquid</td>
<td>93</td>
<td></td>
</tr>
<tr>
<td>--</td>
<td>B611</td>
<td>SRBM</td>
<td>Road-mobile</td>
<td>Most likely C\textsuperscript{R}</td>
<td>Solid</td>
<td>93</td>
<td></td>
</tr>
</tbody>
</table>

\textbf{Table 2 China’s Short Range Ballistic Missiles, source: US National Air and Space Intelligence Center, 2009}

\textsuperscript{731} US National Air and Space Intelligence Center, “Ballistic and cruise missile threat”, NASIC April 2009, p.7.
\textsuperscript{733} With a short range of 93 km, this missile is likely to be used in a conventional role, as a nuclear tactical battlefield role would be a substantial change of China’s nuclear doctrine of strategic countervalue.
Medium Range Ballistic Missiles and Cruise Missiles

Most types of the Chinese MRBM are nuclear weapons, with a range that makes them capable of deterring opponents in the Asian region, Russia and India. China has also used the CSS-5 MRBM technology to develop a conventional missile with alternative roles. The CSS-5 missile is currently used as the basis for the development of an Anti-Ship Ballistic Missile (ASBM, see below). The CSS-5 is also believed to be the vehicle for the Anti-Satellite Test (ASAT), which China conducted in January 2007, when they successfully shot down an inactive Feng Yun (FY-1C) weather satellite with a kinetic kill.\textsuperscript{734} The test in January 2007 was the fourth test with the previous three being failures.

<table>
<thead>
<tr>
<th>MRBM</th>
<th>NATO name</th>
<th>Class</th>
<th>Deployment mode</th>
<th>Warhead Conventional(C)</th>
<th>Fuel</th>
<th>Maximum range km.</th>
<th>Number of launchers</th>
</tr>
</thead>
<tbody>
<tr>
<td>DF-3</td>
<td>CSS-2</td>
<td>MRBM</td>
<td>Transportable Limited mobility</td>
<td>N</td>
<td>Liquid</td>
<td>1,900</td>
<td>5-10</td>
</tr>
<tr>
<td>DF-21</td>
<td>CSS-5 Mod 1</td>
<td>MRBM</td>
<td>Road-mobile</td>
<td>N</td>
<td>Solid</td>
<td>1,100+</td>
<td>&gt;50</td>
</tr>
<tr>
<td>DF-21A</td>
<td>CSS-5 Mod 2</td>
<td>MRBM</td>
<td>Road-mobile</td>
<td>N</td>
<td>Solid</td>
<td>1,100+</td>
<td>&gt;50</td>
</tr>
<tr>
<td>DF-21</td>
<td>CSS-5 Conventional</td>
<td>Conventional warhead</td>
<td>Mobile</td>
<td>C</td>
<td>Solid</td>
<td>1,100</td>
<td>&gt;30</td>
</tr>
<tr>
<td>DH-10</td>
<td>LACM</td>
<td>ASAT</td>
<td>Road-mobile</td>
<td>C</td>
<td>Solid</td>
<td>1,100</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>LACM</td>
<td>Ground and air</td>
<td>Conventional or nuclear</td>
<td>Solid</td>
<td>2000+</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\textit{Table 3 China’s Medium Range Ballistic Missiles, source: US National Air and Space Intelligence Center, 2009}

China has been developing a Land Attack Cruise Missile (LACM) for some time, and in 2009 the US Department of Defense reported that China has deployed 150 – 350 \textbf{DH-10} LACM.\textsuperscript{735} The DH-10 can carry a conventional and nuclear warhead, and has a range of more than 2000 km.\textsuperscript{736} Reports are also saying that China is developing an air launched version of the DH-10, to be launched from the H-6 long range bomber.

\textsuperscript{734} Desmond Ball, “Assessing China’s ASAT program”, Nautilus Institute at RMIT, 14 June 2007, (http://www.nautilus.org/~rmit/forum-reports/0714s-ball/).
Intercontinental Ballistic Missiles

The core of China’s nuclear deterrence is nuclear weapons launched by ICBM. The range of the ICBM has been improved over the years, and the ballistic missiles that China has deployed now, have the ability to strike targets all over the United States, Russia, Asia, the Middle East and Europe, which provide China the ability to threaten all nuclear powers with nuclear retaliation.

<table>
<thead>
<tr>
<th>ICBM</th>
<th>Chinese name</th>
<th>NATO name</th>
<th>Class</th>
<th>Deployment mode</th>
<th>Warhead</th>
<th>Fuel</th>
<th>Maximum range km.</th>
<th>Number of launchers</th>
</tr>
</thead>
<tbody>
<tr>
<td>DF-4</td>
<td>CSS-3</td>
<td>ICBM</td>
<td>Silo &amp; transportable</td>
<td>N</td>
<td>Liquid</td>
<td>3,400+</td>
<td>10-15</td>
<td></td>
</tr>
<tr>
<td>DF-5</td>
<td>CSS-4 Mod 2</td>
<td>ICBM</td>
<td>Silo</td>
<td>N</td>
<td>Liquid</td>
<td>8,000+</td>
<td>~20</td>
<td></td>
</tr>
<tr>
<td>DF-31</td>
<td>CSS-10 Mod 1</td>
<td>ICBM</td>
<td>Road-mobile</td>
<td>N</td>
<td>Solid</td>
<td>4,500+</td>
<td>&gt;15</td>
<td></td>
</tr>
<tr>
<td>DF-31A</td>
<td>CSS-10 Mod 2</td>
<td>ICBM</td>
<td>Road-mobile</td>
<td>N</td>
<td>Solid</td>
<td>11,200+</td>
<td>&gt;15</td>
<td></td>
</tr>
</tbody>
</table>

Table 4 China’s Intercontinental Ballistic Missiles, source: US National Air and Space Intelligence Center, 2009

The JL-2 (see figure below) is carried onboard the Type 094 nuclear submarine, which is why the depicted yellow ring showing the range of the JL-2, can move in accordance with the location of the submarine. The center of this ring can in principle move into any ocean, which supports the credibility of China’s nuclear deterrence.

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737) Has been upgraded from CSS-9 to CSS-10 in accordance with U.S. National Air and Space Intelligence Center. “Ballistic and cruise missile threat”, NASIC April 2009.

Figure 1 Range of China’s Medium Range and Intercontinental Ballistic Missiles. Source: US DoD annual report to congress on China’s People’s Liberation Army 2009, p. 25.
Chapter 10

Nuclear Forces under Development

China has an ongoing nuclear weapons development program, and the main focus of the modernization program is to:

- Increase reliability of missiles – Liquid to solid fuel.
- Increase missile range to create a threat toward continental USA.
- Increase the precision of the missiles.
- Improve survivability to ensure second strike capability (mobility and submarines).
- Use of ballistic missiles for Anti-Ship weapons.
- Development of Land Attack Cruise Missiles.

The following development programs of nuclear weapons and Land Attack Cruise Missiles are in progress:

<table>
<thead>
<tr>
<th>Under development, not yet deployed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese name</td>
</tr>
<tr>
<td>-------------</td>
</tr>
<tr>
<td>CSS-5 ASBM</td>
</tr>
<tr>
<td>DF-5A</td>
</tr>
<tr>
<td>JL-1</td>
</tr>
<tr>
<td>JL-2</td>
</tr>
<tr>
<td>DF-41</td>
</tr>
<tr>
<td>YJ-63</td>
</tr>
</tbody>
</table>

Table 5 China’s nuclear missiles under development, source: US National Air and Space Intelligence Center, 2009

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China’s Nuclear Deterrence

The JL-2 is launched from the new Type 094 nuclear submarine, which is expected operational in 2009-2010.\textsuperscript{744} Pictures of the first launch of the JL-2 from the Type 094 submarine were released by Chinese media on the 60\textsuperscript{th} anniversary of PLAN in April 2009.\textsuperscript{745} Two or three new Type 094 Jin Class submarines are under construction at the Huludao (Bohai) Shipyard, and the Pentagon projects that five might be built.\textsuperscript{746} This would bring the total number of Type 094 Jin Class submarines up to five, which would be sufficient to maintain a continued nuclear strategic deterrence of two submarines carrying a total of 24 JL-2 missiles with a range of more than 4,500 km. Nuclear submarines are able to hide in the depth of the ocean, where they can stay undetected for prolonged periods of time. This capability will therefore provide China with a credible second strike capability and a powerful nuclear deterrent. Countries like the U.S., the United Kingdom, France and Russia also employ nuclear submarines armed with SLBM as nuclear deterrence, and India launched its first nuclear submarine in July 2009.\textsuperscript{747}

The CSS-5 MRBM is currently under further development into an Anti-Ship Ballistic Missile (ASBM). In accordance with a report from the U.S. Office of Naval Intelligence, the Chinese have ground tested the missile three times since 2006, but no flight tests have yet been conducted.\textsuperscript{748} Targeting of ships at sea with ballistic missiles requires a C4ISR system to find the ships and direct the engagement, a geo-location and tracking system for targets at sea, and a guidance system on the CSS-5 ASBM to enable it to home in on and strike the surface ship.\textsuperscript{749} For the purpose of spotting U.S. Navy ships, the Chinese are developing an over-the-horizon radar network along the Chinese coast.\textsuperscript{750} The ASBM technology is being developed to support an access-denial strategy against the US Navy in a Taiwan operation, though it is possible that the Chinese may find the technology useful in the context of a blue water navy on a wider scale. The CSS-5, which is used as the ASBM platform, has a range of 900+ km. However, if the technology is transferred to ballistic missiles with longer range, then it could become a powerful weapon for a blue water navy.

\textsuperscript{744} Ibid. p. 24.
\textsuperscript{747} Sudha Ramachandran, “India’s enemy destroyer sets sail”, Asia Times Online, 29 July 2009, (http://www.atimes.com/atimes/South_Asia/KG29Df03.html).
Ballistic Missile Defense

In 2002, the United States went through a Nuclear Posture Review, in which they made a bottom-up review of their nuclear policies.\textsuperscript{751} With this, the United States changed its nuclear policies away from a “threat based” strategy to a capabilities based approach. With nuclear weapons, the US should be able to deter and attack. The US should also be able to defeat opponents decisively using theatre non-nuclear weapons and nuclear weapons if required.\textsuperscript{752} With its nuclear weapons and the creation of a Ballistic Missile Defense as a nuclear protective shield, the US strove to become immune to nuclear threats from hostile states and offer protection for its friends and allies. Based on this change of policy, the US began researching and developing a Ballistic Missile Defense (BMD) system, which

\textsuperscript{752} Ibid.
China’s Nuclear Deterrence

protects against ICBM/MRBM, and also a Theatre Missile Defense (TMD) system, which is designed to protect military forces against shorter ranged tactical ballistic missiles. China maintains that the American missile defense program will be detrimental to the strategic balance, undermine international and regional security, and have a negative impact on the process of nuclear disarmament. China is concerned about such a development for several reasons. First of all, it undermines the credibility of China’s nuclear doctrine of minimum deterrence combined with a NFU policy. With the combination of such policies, China must absorb the first nuclear attack and then subsequently strike back with nuclear weapons. China must in their calculations of this doctrine accept that some of their nuclear missiles may be destroyed in the first attack against China, which means that a smaller number of Chinese missiles will survive for a counterattack. With the deployment of a BMD system, the US lowers the probability of the Chinese nuclear weapons hitting their target, which in turn jeopardizes the entire Chinese nuclear doctrine of NFU and minimum deterrence. Second, China is also concerned about the use of a US TMD in the context of a Taiwan crisis. The Nuclear Defense Review calls for the Pentagon to prepare emergency plans to use nuclear weapons against China in a war between China and Taiwan. This, combined with the introduction of a BMD/TMD, discredits China’s nuclear deterrence, which is hard for China to accept. Third, countries like Japan and India, with whom China has a difficult relationship, have shown interest in a BMD program. Japan is concerned about the North Korean nuclear program and its ballistic missile test with trajectories over Japan. Japan and the U.S. have decided to expand their cooperation on a Missile Defense Plan. Such a system may protect Japan against missiles from North Korea, but it may also shield Japan against missiles from China. India has also shown an interest in a BMD system. In 2003, India approached the United States about cooperation in a BMD program, which was rejected by US Congress. After the rejection, India started its own development of a TMD, and has performed tests where it successfully shot down tactical missiles in 2006, 2007 and 2009.

India’s TMD program was originally motivated by its concerns about a nuclear Pakistan, but there is also a growing concern about China’s nuclear weapons, and the potential deployment of these in the Tibet region.\textsuperscript{760}

With the development of BMD systems in China’s neighboring countries, China’s nuclear doctrine of NFU and minimum deterrence is severely challenged, but China has a number of ways she can respond. She can try to persuade the other states to stop their BMD/TMD programs, whereby China can maintain a credible nuclear deterrence. Failing that, China has a number of options which can improve its missile defense penetration capability, whereby the credibility of China’s nuclear deterrence can be maintained. She can:

- Increase the amount of warheads in her stock. A larger amount of warheads will statistically have a greater chance of overcoming a BMD system.
- Increase the amount of ballistic missiles available. A larger amount of ballistic missiles will statistically improve the chance that a number of missiles will penetrate the BMD system.
- Implement Multiple Independently Targetable Re-entry Vehicle technology, which means that each missile, instead of carrying one warhead, will be able to carry several warheads or decoys.\textsuperscript{761} This will improve the chance of warhead penetration of the BMD system.
- Increase the amount of nuclear submarines equipped with ICBM, based upon the premise that defense against an SLBM is much more difficult.
- Increase the amount of nuclear armed LACM, based upon the premise that BMD and TMD systems are designed to defend against ballistic missiles and not low flying cruise missiles.
- Develop its own BMD and TMD system, to undermine the credibility of the opponent’s nuclear deterrence strategy, and in this way balance the situation. The Chinese government writes in its whitepaper on “China’s National Defense 2008” that the PLA Air Force is to develop “air and missile defense weapons.”\textsuperscript{762} There is no official information that suggests that China at the moment is developing a BMD system, though the phrase “air and missile defense weapons” above, could indicate that China either has a missile defense program, or is considering it. Even though ballistic missiles have a different flight characteristic from a satellite, the ASAT test showed that China has the technological capability to shoot down high flying, fast moving objects.
- Abandon its NFU policy. Such a change would politically be a very dramatic move and is unlikely, unless there is a great threat to China.

In June 2009, Russia revealed that it has plans to improve its missile defense penetration capabilities by 2016. It will modernize its missiles, its command and control capabilities, and will improve

\textsuperscript{761} Daniel Buchonnet, “Multiple Independently Targetable Reentry Vehicles (MIRVs)”, Lawrence Livermore Laboratory, February 1976, (http://www.gwu.edu/~nsarchiv/nsa/nc/mirv/mirv.html).
the survivability of its nuclear delivery vehicles, including the MIRV technology, which Russia uses in its RS-24 ICBM.\textsuperscript{763} If the United States, Japan, India and Russia continue to develop BMD and TMD systems, then it is likely that China will respond, and China is likely to consider the options listed above.

**Other Weapons of Mass Destruction**

China has signed the major international agreements regarding chemical and biological weapons, including the Geneva Protocol, the Biological Weapons Convention (BWC) and the Chemical Weapons Convention (CWC).\textsuperscript{764} China claims to observe in good faith the obligations of the BWC, and supports the multilateral effort aimed at strengthening the convention, and has established a comprehensive legislation system for the implementation of the convention, set up a national implementation focal point, and has submitted its declarations regarding confidence-building measures to the implementation support unit of the convention.\textsuperscript{765} However, the U.S. suspects China of harboring an offensive biological weapons' program.\textsuperscript{766} A report from the U.S. Secretary of Defense in January 2001 stated that:

“China continues to maintain some elements of an offensive biological warfare program it is believed to have started in the 1950’s. China possesses a sufficiently advanced biotechnology infrastructure to allow it to develop and produce biological agents. Its munitions industry is sufficient to allow it to weaponize any such agents and it has a variety of delivery means that could be used for biological agent delivery.”\textsuperscript{767}

“Since 1984, China consistently has claimed that it never researched, produced, or possessed any biological weapons and never would do so. Nevertheless, China’s declarations under the voluntary BWC declarations for confidence building purposes are believed to be inaccurate and incomplete, and there are some reports that China may retain elements of its biological warfare program.”\textsuperscript{768}


\textsuperscript{764} NTI, “China and Chemical and Biological (CBW) Nonproliferation”, 6 June 2003, (http://www.nti.org/db/china/cbw-pos.htm).


\textsuperscript{768} Ibid.
In spite being a party to the CWC, the January 2001 report from the U.S. Secretary of defense claims that:

“China is also believed to have an advanced chemical warfare program, which includes research, development, production and weaponization capabilities. China’s chemical industry has the capability to produce many chemicals, some of which have been sought by states trying to develop a chemical warfare capability. Foreign sales of such chemicals have been a source of foreign exchange for China.”769

“While China claims it possesses no chemical agent inventory, it is believed to possess a moderate inventory of traditional agents. It has a wide variety of potential delivery systems for chemical agents, including cannon artillery, multiple rocket launchers, mortars, land mines, aerial bombs, SRBMs, and MRBMs. Chinese military forces most likely have a good understanding of chemical warfare doctrine, and its forces routinely conduct defensive chemical warfare training. Even though China has ratified the CWC, made its declaration, and subjected its declared chemical weapons facilities to inspections, we believe that Beijing has not acknowledged the full extent of its chemical weapons program.”770

The U.S. experiences from the Iraq 2003 war, where the U.S. after the war failed to find evidence of the Iraqi nuclear, biological and chemical weapons program, shows how difficult it is to prove such allegations. However, in spite of these experiences, the U.S. is adamant that China has both a biological and a chemical weapons program. The allegations were repeated in a 2006 report to the U.S. Congress from the U.S.-China Economic and Security Review Commission, which claimed that “China is currently conducting biological and chemical weapons research in violation of its obligations under the BWC and CWC.”771

**Summary of China’s Nuclear Deterrence**

China’s NFU pledge and its limited stock of nuclear weapons is evidence of a minimum deterrence doctrine, which relies on an assured second strike capability. Especially the deployment of the Type 094 nuclear submarine with JL-2 ICBM will improve the credibility of this deterrence strategy. Even though the number of missiles has increased from 2006 to 2008, there are no signs that China is about the deviate from the minimum deterrence strategy. This would require a significant increase in the nuclear stock pile and improvements in numbers and sophistication of the weapons. The sophistication of the missiles has been improving, as China has striven to improve her ballistic and cruise missile technology for the purpose of utilizing the capabilities of these weapons for both nuclear and

769) Ibid.
770) Ibid.
conventional purposes. China’s development of ASAT capabilities is likely to continue, and the development of ASBM technologies may continue as well. Especially ASBM technologies may become interesting in the context of a Chinese blue water navy if the technology is transferred to an ICBM platform.

China’s use of ballistic missiles for both conventional and nuclear purposes makes tracking of nuclear missiles very difficult for foreign intelligence agencies, and during crisis and conflict, the use of ballistic missiles with conventional warheads may inadvertently lower the nuclear threshold, as the opposing party does not know whether the incoming missile is conventional or nuclear.

Finally, the pursuit of BMD and TMD systems by the US, Japan and India, with whom China historically has strained relations, may undermine the credibility of China’s nuclear deterrence doctrine. In an effort to maintain credibility of its nuclear policies, China may decide to expand and improve its nuclear inventory, and may potentially decide to embark on a BMD/TMD program herself.
Chapter 11

11.

China’s Military Satellite Program

Since China sent its first satellite into space in 1970, China’s space capabilities have gone through a very impressive development. China launched its first human space flight in 2003, and is planning to establish a manned space lab by 2015. They also, in 2012, China will launch its first lunar probe, with the second lunar probe to land on the moon and take surface samples in 2017. They have developed solid fuel launchers and deployed a robust network of remote sensing satellites that have become an integral part of the PLA informationization process. The PLA is responsible for the Chinese space program, including the human space flight and lunar missions. The two latter programs do not have a direct military application, but since they are run by the PLA, scientific breakthroughs from these programs can be transferred to the military space program. China’s satellite program is highly centralized and the PLA plays the most prominent role in overseeing China’s dual use space infrastructure. Many satellites are owned or operated by a number of government agencies, universities and the quasi-private sector, but the PLA is responsible for the launch facilities and on-orbit command and control and will be able to use the satellites for military purposes if required.

The Chinese space industry is composed of two conglomerates, the China Aerospace Science and Technology Corporation (CASTC) and China Aerospace Science and Industry Corporation (CASIC), which is subordinate to the State Administration of Science Technology and Industry for National Defense (SASTIND) under the Ministry of Industry and Informationization, which is under the CMC.

The aims of the Chinese space program are to: Explore outer space, and enhance understanding of the earth and the cosmos; to utilize outer space for peaceful purposes, promote human civilization and social progress, and benefit the whole of mankind; to meet the demands of economic development.
construction, scientific and technological development, national security (emphasis added) and social progress; and to raise the scientific quality of the Chinese people, protect China’s national interests and rights, and build up the comprehensive national strength (emphasis added).  

The underlined phrases above clearly show that the Chinese space program has a military dimension. It is beyond the scope of this book to describe and analyze the entire space program with human space flight and lunar missions. Instead, this book will focus on the more narrow topic of PLA military satellites, as they are the predominant part of the PLA’s current military space assets, and an integral part of PLA conventional and nuclear operations.

**The Satellite Program**  
China sent its first satellite into space in 1970, and since then she has launched 115 additional satellites, 103 of which have been successful, and 4 being partially successful.  

The satellite program rests on the successful development of a series of launch vehicles, of which the most capable, the ChangZheng 4, is able to lift 2,200 kg into a sun-synchronous orbit. However, the Chinese launch capability is about to improve significantly. China is developing the ChangZheng 5 Launch Vehicle, which is planned to be ready for launch by 2014. It will have the ability to lift 25 tons into low earth orbit or 14 tons into geostationary orbit (GSO). With this launch vehicle capability, and with satellites getting smaller and lighter, China will be well prepared for a very active space program in the future. China has deployed a series of civilian and military satellites. The military satellites are controlled by the PLA, and they include communications satellites, imaging satellites and earth observation satellites, which consist of weather satellites and maritime observation satellites.

**Communications Satellites**  
China has launched a series of communication satellites, which are becoming more and more crucial to Chinese military operations, as China is starting to rely on satellite communication to overcome...
tremendous long distances and difficult mountainous terrain. Qu Dian, China’s main theatre level
Command, Control, Communications, Computers, Intelligence, Surveillance, Targeting and Recon-
naissance (C4ISTAR) system relies on the FengHuo 1 satellite for its communication with subordinate
military units, and the command and control of a Chinese blue water navy sailing out of region will be
totally dependent on global satellite communications. China currently has the following communica-
tion satellites:

<table>
<thead>
<tr>
<th>Public Name</th>
<th>Military Name</th>
<th>Launch</th>
<th>Purpose</th>
<th>Orbit</th>
<th>Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>ChinaSat 22</td>
<td>FengHuo 1 (FH-1)</td>
<td>2006</td>
<td>Tactical military communication. Secure data and voice for a theatre-level</td>
<td>GSO 98 Deg E</td>
<td>China, Asia, South China Sea Indian Ocean</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C4I network (Qu-Dian)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ChinaSat 20</td>
<td>ShenTong 1 (ST-1)</td>
<td>2003</td>
<td>Military communication. Secure voice/data for ground users</td>
<td>GSO 103 Deg E</td>
<td>China, Asia, South China Sea Indian Ocean</td>
</tr>
<tr>
<td>Sinosat 2</td>
<td>DongFangHong 4 (DFH-4)</td>
<td>2009~2010</td>
<td>Large-capacity communication satellite. Capacity of 150~200 television programs. Jam resistant. Can transmit data (maps, pictures, intelligence data to small units, man carried receivers.</td>
<td>GSO 92.2 Deg E</td>
<td>China, Asia, South China Sea Indian Ocean</td>
</tr>
<tr>
<td>TianLian 1 Data relay Satellite</td>
<td>2008</td>
<td>Data relay satellite to provide near-real-time communication with orbiting spacecraft and the ground control.</td>
<td>GSO 77 Deg E.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1 China’s military communication satellites. Source: Sinodefence.com

Communication satellites in general are positioned in a GSO, where the satellites remain in a circular
orbit 35,785 km above Earth’s Equator. The satellite’s orbital period is equal to the Earth’s rotation,
making the satellites remain in the same spot in the sky every day. This particular orbit is used for
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orbit 35,785 km above Earth’s Equator. The satellite’s orbital period is equal to the Earth’s rotation,
making the satellites remain in the same spot in the sky every day. This particular orbit is used for
meteorological and communications satellites.

The latest Chinese military communication satellite is the DFH-4, which has shown itself to be vulner-
able and unreliable. The first DFH-4, which China launched in October 2006, never became opera-

783) China launched the first DongFangHong 4 satellite in 2006. However, the satellite’s solar panels and antenna failed to
deploy, rendering the satellite unusable. A replacement satellite is expected to be launched in 2009-2010. Source: Sinode-
fence.com.


All of the PLA’s communication satellites are positioned between 77-99 Degrees East, from where they provide communication coverage over China, Asia, the South China Sea and the India Ocean. To obtain global coverage for Chinese merchant ships, the Chinese Transportation and Telecommunication Center has entered into an agreement with the commercial satellite company Inmarsat, who is providing a global communication service to China using 11 satellites.\footnote{People’s Daily Online, “China’s maritime satellite broadband to have worldwide coverage”, 17 February 2009, (http://english.people.com.cn/90001/90776/90882/6594792.html).} Inmarsat provides a high-speed broadband and video satellite service on land, at sea and in the air with a 432 Kbps internet service. Inmarsat also provides a service to military users, in which the satellites support most encryption modules.\footnote{Inmarsat, “Government Coverage and Reliability”, downloaded 22 June 2009, (http://www.inmarsat.com/services/maritime/Government.aspx?language=EN&tectonly=false).}

Data Relay Satellites. In 2008, China launched the TianLian 1 Data Relay Satellite, which will relay communication between orbiting spacecraft and ground control. The system can also be used to test orbiting satellites data link with the ground station.\footnote{Sinodefence.com, “TianLian 1 Data Relay Satellite System”, 26 September 2008, (http://www.sinodefence.com/space/spacecraft/tianlian1.asp).} The TianLian 1 is meant to support the Shenzhou 7 manned spaceflight, though it can also serve different purposes. In the U.S., data relay satellites have for many years been used to provide data relay for military radar imaging re-
connaissance satellites, and this is also possible for China. In order to have near-real-time data streaming from imaging satellites on the opposite side of the world, it is necessary to relay the data via a data-relay satellite. China currently has one data-relay satellite, which can provide 50% global coverage. Two data-relay satellites provide 85% global coverage. The TianLian 1 is positioned in a geostationary orbit over the Indian Ocean at 77 Deg E., but China is considering the need for more data relay satellites. A research paper published by the *Journal of Electronic Science and Technology of China* promotes a medium earth orbit tracking and data relay satellite system for China, consisting of 6 data relay satellites. With such a capability, the Chinese data relay satellites would be able to provide global coverage to all low earth orbit satellites above 50 km, and would provide the data in near-real-time to China.

With its current organic communication satellites, China only has satellite coverage over China and its neighboring regions. China has relied on commercial satellite communication to cover its requirements for operations out of region, such as its UN forces and the maritime task group participating in the anti-piracy operation off Somalia. However, this setup can only cover small scale communication, and it does not have the bandwidth that is required to support a blue water navy. It can therefore be expected that China in the coming decade will launch more communication satellites, which will provide global military satellite communication coverage. China will undoubtedly also improve the technology level of her communication satellites in the coming decade, but even today, China possesses the required technology level to obtain global coverage.

**Imaging Satellites**

Imaging satellites are fundamental to the collection of strategic intelligence information. The information that is collected by imaging satellites provides knowledge about the development of other countries’ military forces, and can provide strategic warning about a potential future crisis, as seen when U.S. satellites discovered the installation of Soviet nuclear weapons on Cuba, which led to the 1962 Cuba Crisis. Imaging satellites make strategic surprise very difficult, and they are therefore extremely important to the maintenance of a global military balance. China has for several decades had access to data from foreign satellites, which has given China global image satellite coverage, even though the resolution of civilian satellites is less than that of military satellites. China has ground stations

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796) Which would include most low earth orbit satellites and imagery satellites that are usually in a low earth orbit. Source Ibid. p. 4.
that can receive data from France’s SPOT, the European Union’s ERS, the U.S. LANDSAT, Japan’s JERS and the Canadian RADARSAT. The fact that China has had access to this data over several decades, suggests that China has a well developed satellite image analysis capability, with five national level centers for the analysis of space imagery. The PLA is currently acquiring precision guided long range anti-ship missiles and land attack cruise missiles. These missiles require “precision intelligence”, in the sense that target coordinates must be provided with a fidelity that matches the precision of the missile. Civilian satellites do not have such a level of fidelity, and the use of civilian imaging satellites is a problem when it comes to maintaining secrecy of national intelligence information. The PLA therefore needs its own organic or Chinese national high resolution imaging satellites. The key to an imaging satellite is the resolution of the pictures. The smaller the resolution, the more detail the pictures has. With a twenty meter resolution, one can identify a naval vessel, while a 1 meter resolution picture allows for identifying a type of ship, aircraft and armored vehicle, which is important for intelligence purposes. The type of sensor is also important. Multispectral satellites, which can use infrared radiation to create images, are more useful, because they can use the contrast of a normal picture and an infrared picture, which may provide more detail. High resolution radar imagery will provide the capability to see through clouds and unmask decoys.

798) Ibid, p. 5.
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China has the following imaging satellites:

<table>
<thead>
<tr>
<th>Public Name</th>
<th>Military Name</th>
<th>No. of Sat.</th>
<th>Details</th>
<th>Orbit</th>
<th>Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZiYuan 2</td>
<td>JianBing 3</td>
<td>3</td>
<td>High resolution digital cameras (CCD) (&lt;3m resolution) Infrared Multispectral Scanning Pictures are transmitted in real-time to the ground</td>
<td>Sun-Synchronous Orbit (SSO)</td>
<td>With 3 imaging satellites a point on the Earth is covered every 8 hours.</td>
</tr>
<tr>
<td>YaoGan</td>
<td>Weixing</td>
<td>6</td>
<td>Two types of satellites have been identified: 2 Electro-optical digital imaging 4 Synthetic Aperture Radar Synthetic aperture radar has the advantage of being able to generate a picture all weather-day/night</td>
<td>SSO 603 km</td>
<td>With 6 imaging satellites a point on the Earth is covered every 4 hours.</td>
</tr>
<tr>
<td>Huanjing</td>
<td></td>
<td>2</td>
<td>Huanjing 1A: Multispectral CCD, resolution 30m, swath 700 km; Infrared sensors, real-time imaging, optical Huanjing 1B: Hyperspectral: infrared, resolution 30 m, real-time imaging, optical China has plans for launching 8 Huanjing satellites, four optical and four synthetic aperture radar.</td>
<td>SSO 650 km</td>
<td>With eight imaging satellites a point on the earth is covered every 3 hours</td>
</tr>
<tr>
<td>Shiyan</td>
<td>Tansuo</td>
<td>3</td>
<td>Scientific satellites equipped with high resolution electro-optical, near infrared; CCD survey cameras, 10m resolution, swath 120 km.</td>
<td>~700 km</td>
<td></td>
</tr>
</tbody>
</table>

Table 2 China’s military imaging satellites, Source: Eric Hagt and Matthew Durnin, “China’s Antiship Ballistic Missile” and Sinodefence.com

China uses the Yaogan satellite with its synthetic aperture radar to provide intelligence information and especially targeting information. A synthetic aperture radar uses microwave technology, and is able to generate a picture through clouds, rain, fog and dust, and can detect targets on the ground, underground and in or under the ocean. Synthetic aperture radar satellites are extremely useful in

801) Ibid.
tracking moving targets, and are used to develop digital mapping. The Chinese are also experimenting with using synthetic aperture radar for tracking submarines in shallow waters.

However, a close look at the Chinese imaging satellite capability will show that while the Chinese capability is good for taking pictures at static locations in peacetime, it is more limited when it comes to providing real-time support to moving objects, such as ships. The PLA currently has fourteen imaging satellites, which are all in a Sun-Synchronous orbit (SSO). A satellite in a SSO remains constant in relation to the sun, and passes close to both poles and crosses the meridians at an angle. The orbit height is between 500 and 800 km, which is much closer than a geostationary satellite, and this makes the SSO much more suitable for imaging satellites. One orbit takes about 102 minutes and carries the satellite over a different swath of territory in each pass 14 times a day, so that the satellite will cross the Equator at 14 different longitudes and return to the first longitude once per day. With 14 passes in a day, a satellite moves 25 degrees longitude in every pass, which, measured on the surface of the Earth around the South China Sea, is equivalent to a distance of 2,780 km between each pass. With such a distance between passes, it is clear that more than one satellite is required to obtain a good coverage over a certain area. A leaflet from the Chinese Academy of Science’s Institute of Electronics said that the Chinese synthetic aperture radar had a high resolution mode with a field of view of 40 km, and 5 m resolution, whereas the low resolution had a resolution of 20 m and a field of view of 100 km. Even with a wide field of view of 100 km, this type of satellite provides a poor general coverage when there are 2,780 km between the passes. This type of satellite is therefore not well suited for general earth observation, and it can be difficult to track a moving target unless information about its location is obtained beforehand from other sources. Currently China does not have a continued satellite coverage over the South China Sea. The average time between revisits over a particular point in this region is forty-five minutes, with fourteen passes over the selected target area each day, but with nine gaps in coverage of two hours or longer. A maritime vessel sailing 25 knots (46.3 km/h), will sail a distance of 92.6 km in two hours, which is

806) Roughly measured on Google Earth.
a long distance, considering the field of view of the satellites is 40km in narrow field of view and 100 km in the wide field of view. It can therefore be necessary to support the SSO imaging satellites with a geo-stationary earth observation satellite, which can provide the “big picture.”

China is in the process of launching more satellites. In the near future China will launch another two optical and four Huanjing synthetic aperture radar satellites, bringing the total number of imaging satellites to 20 of which 8 are synthetic aperture radars. In theory, with the currently planned launches of civilian satellites, combined with an extrapolation of China’s rate of launch of military satellites over the last few years, China would be able to obtain a near-continuous coverage within the Asia-Pacific region in five years, and have a global satellite coverage in only ten years.

Earth Observation Satellites

Military operations can be limited by poor weather conditions, and accurate prediction of the weather is crucial to military planning. Maritime vessels are subject to storms at sea, and military aircraft are limited by low hanging clouds and fog. Modern weapon systems often rely on laser designation or television guided seekers, which are hampered by limited visibility. The PLA operates a number of weather observation satellites, which are positioned in geostationary orbits, polar orbits and sun-synchronous orbits. These provide China and the PLA with important weather information, which is particularly important in the Asian region, where tropical storms, torrential rain and high levels of snow are common. The weather satellites also provide crucial weather information to the Chinese society. The PLA operates a maritime surveillance satellite, HaiYang 1, which observes the Yellow Sea, the East China Sea and the South China Sea. This radar may have other purposes than maritime surveillance. During the Cold War, the Russians used maritime reconnaissance radar satellites to provide data for long-range anti-ship missiles aimed at U.S. task forces. The PLA require a similar capability for its anti-access strategy in a Taiwan operation, and Chinese Maritime Surveillance Satellites could be used in the role of locating large ships and for providing targeting data. China plans to deploy the next generation of a maritime surveillance satellite, the HaiYang 2A, which will use microwave technology that improves the resolution of the satellite. To be fully effective, the maritime

811) Ibid pp. 102-103.
reconnaissance satellites must be complemented by a SIGINT source that can identify the maritime vessel that has been observed. China has both ground based, maritime and aircraft based SIGINT platforms. However, China does not have a satellite based SIGINT capability. A blue water navy is extremely dependent on reliable intelligence information about the area in which it is about to operate, which may be hundreds of miles away from its current position, and the carrier groups must have up-to-date imagery, communication and SIGINT information to establish a current intelligence picture, prior to entering the area of operation. A blue water navy will require SIGINT data beyond the reach of its organic aircraft and ship based SIGINT sources, and it is therefore likely that China will attempt to deploy SIGINT satellites in the future. Open source literature is almost completely silent on China’s satellite SIGINT assets, but indirect evidence, such as articles on development of antenna technology for SIGINT satellites and algorithms for synthetic identification based on electronic and optical imaging surveillance, suggests that China either does have these capabilities or is actively developing them.

### Navigation Satellites

China joined the European Union (EU) Galileo satellite navigation system in 2003, and invested significant sums in the project. Participation in the Galileo project provided China with important technological knowhow, since Chinese R&D organizations became a part of the project. However, problems arose in the cooperation between the EU and China. After having joined the Galileo program, the Chinese were informed that they would not be allowed any role in Galileo’s controlling bodies, and would have no access to sensitive security codes. After this, China in 2006 decided to leave the Galileo project and pursue the development of an indigenous satellite navigation system, the COMPASS system.

Before participating in the Galileo project, China had been developing an experimental satellite navigation system, the BEIDOU 1, with its first satellite launched into a geostationary orbit in 2000. Since then, an additional 3 experimental satellites have been launched into geostationary orbits.

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The satellites provide satellite navigation services in a fixed area within 70-140 Degrees East, 5-55 Degrees North, which covers the area of China and the Yellow Sea, East China Sea and South China Sea.\footnote{Sinodefence.com “BEIDOU 1Experimental Satellite Navigation System”, 24 September 2008, (http://www.sinodefence.com/space/cspacecraft/beidou1.asp).} BEIDOU 1 is a primitive system compared to the U.S. GPS system, but it is an experimental system. The experiences gained from BEIDOU 1 and the Chinese participation in the Galileo project made it possible for China to develop a successor to BEIDOU 1, the COMPASS (BEIDOU 2) satellite navigation system. COMPASS is a system of up to 30 orbiting navigation satellites, which will provide global satellite navigation coverage similar to the current GPS system. The system can provide global continuous high accuracy, real-time, passive, 3D geo-spatial positioning and speed measurement.\footnote{Sinodefence.com, “COMPASS (BEIDOU 2) Satellite Navigation System”, 1 May 2009, (http://www.sinodefence.com/space/spacecraft/beidou2.asp).}

The second COMPASS satellite was launched in April 2009,\footnote{China Daily, “China to launch 2nd navigation satellite”, 12 April 2009, (http://www.chinadaily.com.cn/china/2009-04/12/content_7669770.htm).} and 10 satellites are planned to be launched in 2009-2010.\footnote{Rick C. Hodgin, “China Planning its own full earth GPS system by 2015”, 19 January 2009, (http://www.tgdaily.com/content/view/41086/113/).} The system will be free and open to global civilian users with an accuracy of 10 m, a timing accuracy of 20 ns, and a velocity accuracy of 0.2 m/s. The system will also have the ability to provide a signal with a higher accuracy for licensed users and for the Chinese military.\footnote{Sinodefence.com, “COMPASS (BEIDOU 2) Satellite Navigation System”, 1 May 2009, (http://www.sinodefence.com/space/spacecraft/beidou2.asp).}

The U.S. GPS system has become essential for the entire world in the sense that the GPS system provides navigational and timing references to systems throughout our civilian society, as well as for military forces. The COMPASS system will set up a similar capability, free of charge and in strong competition with GPS, the European Galileo system and the Russian GLONASS system. The COMPASS system will provide essential capabilities to the Chinese military. It will have a global satellite navigation signal that enables the use of high precision weapons, and its forces will be able to navigate all over the world, on the ground, in the air and on the high seas. The satellite navigation signal is controlled by the PLA, who will be able to rely on an uninterrupted navigation signal during a crisis.

Microsatellites

China has continued to improve her satellites, and has managed to develop microsatellites, which are satellites with a weight of about 50 kg. China launched its first experimental microsatellite in 2000, the TSINGHUA-1, and managed to take a picture from the satellite and transmit it to earth.
The picture had a resolution of 39 m in three spectral bands. In 2004, China went further and launched its first 25kg nano satellite, NAXING-1, which conducted “high tech experiments”. Because the satellites are so small and light, a carrier rocket will be able to carry many more satellites, and in this way China will be able to accelerate its satellite program. Since then, China has developed the microsatellites further. When China launched its third human spaceflight, Shenzhou-7 (SH-7), they had attached a small microsatellite BX-1 to the space capsule. During orbit, the BX-1 was released from the SH-7. It drifted away from the SH-7 and maneuvered into a position from where it could provide photo coverage of the SH-7. Foreign observers have analyzed this maneuver and concluded that the microsatellite maneuver was in fact a test of some of the capabilities required for a co-orbital anti-satellite (ASAT) attack. During the Cold War, the Soviet Union developed a similar concept, except that the spacecraft would carry explosives and destroy the target satellite. Whether the Chinese maneuvering of the microsatellite was in fact an ASAT test is difficult to say, but the Chinese did demonstrate that they have the technology to create an orbital ASAT capability with microsatellites.

The Space Program and the Militarization of Space

The development of the BX-1 microsatellite is in itself not evidence that China has an orbital ASAT capability. However, this is not the only event where China has been experimenting with disabling satellites. China has been experimenting with a ground-laser for blinding U.S. image satellites, and in January 2007, China conducted the ASAT test, where they destroyed a retired Low Earth Orbit weather satellite with a DF-21 Medium Range Ballistic Missile.

These events strongly indicate that China wants to have a satellite disabling capability. China has experimented with and tested various systems, and China currently has the technology necessary to destroy satellites. The official Chinese position regarding arms in space, is that China wants a peaceful use of outer space and is opposed to the introduction of weapons and an arms race in outer space. However, the downing of the satellite with a ballistic missile, laser blinding tests and the

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microsatellite tests, makes it hard to trust the Chinese official policy, and it is likely that a space arms race is already under development. This notion was further reinforced on 1\textsuperscript{st} November 2009, when the commander of the PLAAF, General Xu Qiliang, stated that “China will develop an air force with integrated capabilities for both offensive and defensive operations in space as well as in the air”. He went on to call “militarization in the space and in the air a threat to mankind” and that “China must develop a strong force in the two arenas in order to face challenges of that threat”.\textsuperscript{831} In the following days the Chinese Ministry of Foreign Affairs denied the statements made by General Xu Qiliang, and stated that “China’s space program is for only peaceful ventures”.\textsuperscript{832} In the U.S., discussions are taking place as to how the U.S. can counter the Chinese development of an ASAT capability. The options being discussed among experts include the development of U.S. ground and space based ASAT systems, deployment of a large number of microsatellites, creation of stealth satellites and other measures. If these measures were implemented, then China would be likely to follow suit, and that could be the beginning of a space arms race. The Chinese development of an ASBM capability, which is heavily reliant on space assets, will also add to the risk of an arms race in space. A key vulnerability of the ASBM system is the use of satellites, and the space infrastructure with which they are launched and controlled. A successful development of the ASBM system is a serious strategic deterrent to the U.S. and it is likely to make the U.S. develop countermeasures, which may include a mature ASAT capability. That would be another step in a space arms race.

**The Chinese Space Doctrine**

The PLA is very aware of the importance of space to the future battlefield. They believe that the impact of the “space battlefield” (Taikong zhangchang, 太空战场) will become ever greater on the land, sea and air battlefields, and the space battlefield will be a major component of future conflict.\textsuperscript{833} It is not clear whether China has developed or promulgated a space doctrine.\textsuperscript{834} However, studies of Chinese literature on space warfare lead experts to believe that the PLA is developing a doctrine for


\textsuperscript{834} Ibid. p. 214.
space operations, which is inspired by both U.S. and Soviet era space doctrine. Space operations are part of the PLA informationization process. The space doctrine involves defensive and offensive space operations, and some PLA strategists believe that space will be one of the natural domains of war, and that war in space will be an integral part of military operations. They believe that “space supremacy” must be an integral part of other forms of supremacy over the battlefield. This concept lies close to the concept of sea control and air superiority, which are common domain control measures applied in modern conventional warfare. The PLA is exploring a variety of space weapons through theoretical, basic and applied research. These include:

- Satellite jamming technology
- Collisions between space bodies
- Kinetic energy weapons
- Space to ground attack weapons
- Space planes that can transit and fight “up or down” in the upper atmosphere or space
- High power laser weapons
- High power microwave weapons systems
- Particle beam weapons
- Electromagnetic pulse

Summary on China’s Military Satellite Program

The Chinese satellite program has gone through an impressive development process with new capabilities surfacing regularly. The PLA is prioritizing the development of space assets, and sees space assets as a key to the development of its military capabilities. Space assets are an integral part of the informationization process of all four services, and for the development of a theatre-level C4ISTAR network for integrated joint operations. Chinese satellites currently provide coverage for communication and earth observation over the Chinese region and the neighboring areas. Whereas China already has a global coverage of military image satellites, the coverage is relatively thin, and has its limitations when it comes to support of current operations. To obtain global satellite coverage, China will have to deploy many more satellites, and the development of more powerful launch

vehicles and smaller satellites suggests that China will do just that. China has the technology re-
quired to obtain global satellite coverage, and it is most likely only a matter of time before this is
achieved. Even though China advocates a peaceful use of space, the military components of her
space activities are predominant. The downing of the weather satellite with a ballistic missile in 2007
is evidence of a desire to possess ASAT weapons, and the suspicion among foreign observers that
China has a space weapon development program, has been fueled further by the maneuvering of
the microsatellite during the SH-7 mission. These events and the U.S. response have provided fertile
ground for an arms race in space in the future.
The Military-Industrial Complex, Arms Import and Export

12.

The Military-Industrial Complex, Arms Import and Export

The Creation of a Military Industry During Chairman Mao

The creation of an innovative creative military industry is necessary if China is ever to become a world superpower. Over the course of the past sixty years, China has endured civil war and the rule of a communist regime with centralized, rigid and stove-piped economic management procedures, which led to the creation of a state owned military industry that was underdeveloped and badly managed. Chairman Mao’s Great Leap Forward from 1958 to 1962 attempted to promote high-speed economic development, but the plan was detrimental to the industry. Industrial leaders and technical experts were replaced by political elitists who wreaked havoc in the conventional defense industry. Dozens of conventional arms development programs were launched, including advanced fighter and missile development programs, which had no chance of success. The Cold War’s threat of nuclear war from the 1960’s to the 1980’s made China prioritize the production of nuclear weapons for her protection, whereas the conventional arms industry was given a lower priority. Chairman Mao’s doctrine of “People’s War” prioritized “man over machine”, and focused the PLA on infantry warfare, rather than on creating a mechanized ground force. Thirty eight R&D institutes with eighty thousand employees were established during this timeframe, but research was stove-piped and had no link to the defense industry. Conventional weapons designers were not permitted to liaise with production enterprise managers, and they were denied access to the PLA users. Innovations developed at the R&D institutes were handed over to the industry, and the R&D returned to new projects. This was very inefficient and slowed down production of new weapons significantly. By the mid- to late 1960’s, only the aviation, shipbuilding, ordnance and electronics sector could claim some success, mostly in the form of the copying or reverse engineering of Soviet weapons, enabling a Chinese production with minor improvements to the original product. However, the 1966 to 1975 Cultural Revolution tore the country apart politically, and caused a near collapse of the military.

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842) Tai Ming Cheung, “Fortifying China; The Struggle to Build a Modern Defense Economy”, Cornell, 2009, p.34.
industry, crippling research and development programs for extended periods of time. Only the strategic weapons industry was able to remain relatively unscathed.

Overall, the conventional arms industry suffered from severe political conditions and political and industrial mismanagement. In accordance with communist party traditions, the state monopolized industry was given political quantitative production goals, which were decided upon with limited PLA input. There was no industrial competition. The industry was guaranteed work orders, and payment was production costs plus 5 percent, which left no incentive for the industry to minimize cost or make its production effective. The system lacked any incentive or possibility to be effective, proactive and innovative, which was toxic for the creation of an effective industry for conventional weapons.

The opposite was valid for the strategic weapons industry, which was very successful. The threat of nuclear war meant that there was a high demand for nuclear weapons, which gave the project a very high priority, with the associated access to high level politicians and money. They had access to foreign know-how, and because of the low quantity of weapons to be produced, the industry organization facilitated that research, development and production were done by the same group of people at the same facilities. This led to great results in a relatively short period of time.

**The Winds of Change During Deng Xiaoping**

Deng Xiaoping’s assessment in 1978 that the threat of nuclear war against China had subsided, enabled a change of the industrial focus on the military industry to prioritizing the civilian economy, which was to be opened up to market demand and integrated with the wider international economy. Deng Xiaoping announced that military development is the object of general economic modernization, and that the CPC’s main aim for the civilian economy is to support the building of modern military weapons and to support the aims of the PLA. In 1997, the CPC formally

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848) The four modernizations policy in which industry, agriculture, science and technology and national defense would undergo reform. The national defense industry would become the lowest prioritized and struggle for years. Source: Keith Crane, Roger Cliff, Evan Medeiros, James Mulvenon, William Overholt, *Modernizing China’s Military; Opportunities and Constraints*, RAND Corporation, 2005, pp. 138-139.
codified this by the “16-Character Policy”, which is the CPC’s overall direction between military and commercial interests. The sixteen characters literally mean:\textsuperscript{850}

- \textbf{Jun-min jiehe} (Combine the military and civil)
- \textbf{Ping-zhan jiehe} (Combine peace and war)
- \textbf{Jun-pin youxian} (Give priority to military products)
- \textbf{Yi min yan jun} (Let the civil support the military)

As a long term strategy, the civilian economy was given priority, because it was seen as the foundation for the defense economy. Deng Xiaoping foresaw that there would be 50 years of peace, which would enable a reduction of the PLA from 4.2 million to 3.2 million men, and the savings from the reduced military force were put into the civilian economy. Deng transformed the economy from a plan economy to a guidance planning, where the market and the state could coexist. The defense industry was told to restructure and change their production to civilian or dual-use products, and by the 1990’s the civilian output of the defense industry accounted for more than 80 percent of the total production. What was remarkable was that the part of the industry that produced civilian or dual-use products went through significant changes, whereas the military part remained reluctant to join the reform process.\textsuperscript{851} In 1987, a Contract Responsibility System was introduced into the defense sector, under which defense enterprises were required to negotiate contracts, budgets, profits, schedules and quality standards directly with PLA departments.\textsuperscript{852} This was a significant step away from plan economy, and would coordinate production with demand.

In the mid 1980’s, China established a mechanism to concentrate the long term development of China’s science and technology establishment on seven dual-use high-technology sectors; automation, biotechnology, energy, information technology, lasers, new materials and space technology.\textsuperscript{853} This became known as the 863 program, as it was adopted in March 1986, and it was a program that gave momentum to the defense industry.

\textbf{Commission of Science, Technology, and Industry for National Defense (COSTIND)}

Since 1950, the Chinese industry had been centrally organized under ministries that would set out production goals for the industry. The first reorganization took place in 1952, by the creation

\textsuperscript{850} Ibid.
\textsuperscript{851} Tai Ming Cheung, “Fortifying China; The Struggle to Build a Modern Defense Economy”, Cornell, 2009, pp. 52-53.
\textsuperscript{852} Ibid, p. 83.
\textsuperscript{853} Mark A. Stokes, “China’s Strategic Modernization; Implications for the United States”, Strategic Studies Institute, September 1999, p. 16.
of two separate ministries, one for civilian production and one for military production. In the following decades, up until 1998, the ministerial level bureaucracy went through 47 small or large reorganizations.854 Some of them were due to technological innovations, such as atomic weapons, ballistic missiles and strategic submarine programs, but most of the reorganizations were attempts to improve poor quality output from the defense industry. The regime sought organizational change as a solution to problems that were caused by a rigid socialist ideology, with its centralized management style and no incentive for innovation and improvement at industry level. From 1982 to 1988, the industrial organization at the ministerial level went through several rounds of restructuring and consolidation that actually ended up significantly decreasing industry efficiency and the economic scale, which was a definite step backward.

Until 1998, the Chinese Commission of Science, Technology and Industry for National Defense (COSTIND) comprised a joint military-civilian body responsible for China’s defense industries, as well as for overseeing procurement by the PLA. The clash of interest between the weapons manufacturer and the procurer led to a change of organization in 1998, where the new COSTIND became responsible for the regulation of China’s defense manufacturers, and for facilitating coordination between these and the Chinese military.855 COSTIND is also responsible for overseeing a number of defense-related universities, as well as the Southwest Institute of Engineering Physics, which develops nuclear weapons.

When the role of COSTIND was redefined to exclusively taking care of the civilian manufacturers, a new General Armaments Department (GAD) was created within the PLA, which was to be responsible for acquisition and maintenance of PLA weapon systems. The GAD role is to be an advocate for the PLA in the context of weapons acquisition, and by disconnecting the link between the industry and the user, the PLA would be able to implement a more effective acquisition process that would put more pressure on the industry and stimulate the Chinese weapons industry to improve itself and be more responsive to the needs of the PLA.856 In the following years, the PLA acquired a number of key weapon systems mainly from Russia.857

The separation of COSTIND and GAD made the new COSTIND implement an extensive range of rules and work procedures for how it would govern its responsibility, and from 1998 to 2002, it issued more than twenty regulations and documents on technological and quality control to be

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implemented by the industry. In 2004, COSTIND published an “Outline of National Defense Science, Technology and Industry Policy”, which set out the development goals, priorities and the direction of the defense industry’s long-term transformation:858

- Financing. The establishment of a long-term investment mechanism to fund the development of the defense industry, including the use of private funds and listing of enterprises on the stock market.
- Boosting the information technology levels of the defense economy.
- Accelerating research, development and production of high technology weapons.
- Integration of military and economic sectors, expanding the development of dual-use military-civilian technologies.
- Priority on high-technology industrial sectors, such as information technology, new materials, energy conservation, environmental protection and life sciences.
- Implementing a “suitable” degree of competition in research and development and production.

Among the changes and reforms that were implemented during this era, two developments had a profound effect on the structure, dynamics and performance of the military industry. The first was a change in the criteria for evaluating performance of the companies. In the past, performance was measured in the amount of output, which had to meet output goals set in the five year plan. This system would reward quantitative output performance, but ignore issues of demand, quality and economic viability. The new criteria for measuring performance were economic efficiency, such as revenues, costs and production-to-labor ratios.859 The second reform was the decentralization of decision making authority over resource allocations and operational decision making among the entities.860

The systemic changes and reforms met resistance within the defense industry, which was used to the Maoist tradition of valuing production over innovation, and especially the economic performance valuation met a lot of resistance.861 There are also a number of constraints to the successful implementation of the defense industrial reforms; (1) One is that efforts to rationalize and downsize the industry are raising concerns about social instability as a result of unemployment. (2) On a systemic level, the creation of GAD and the diminishing of the responsibilities of COSTIND injected friction into the system, as GAD gained influence over central government procurement related decisions at the expense of COSTIND, and (3) on a more practical level, the Chinese industry was

860) Ibid.
reluctant to adopt market economic practices, as they had a historic tradition of seeking suppliers locally, rather than seeking cooperation with companies in other regions, even though they might offer higher quality at lower cost.\footnote{Keith Crane, Roger Cliff, Evan Medeiros, James Mulvenon, William Overholt, “Modernizing China’s Military; Opportunities and Constraints”, RAND Corporation, 2005, pp. 174-175.}

As a result of subsequent restructuring, COSTIND was superseded in 2008 by the State Administration of Science, Technology and Industry for National Defense. (SASTIND).

\begin{figure}
\centering
\includegraphics[width=\textwidth]{figure1}
\caption{Chinese defense science and technology organizational structure, 2008. Source: Tai Ming Cheung, “Fortifying China; The Struggle to Build a Modern Defense Economy”, Cornwell, 2009, p. 119.}
\end{figure}

The Military-Industrial Complex

In the 1990’s, the state owned defense sector was in a state of disrepair with negligible competition, very little innovation, poor proficiency and accumulating losses. In 1998, 61% of all defense industrial enterprises had negative results, and the total defense industry had a net loss of Rmb 2.5 billion. It was decided to undertake a thorough overhaul of the entire sector, and the five dominant corporations were broken up into ten conglomerates, which contain R&D, development, production and sales, with an eleventh added in 2002. In 2008, the Commercial Aviation Corporation (COMAC) was created, and two major aviation conglomerates - Aviation Industries of China (AVIC) 1 and AVIC 2 - were merged into one major conglomerate; Aviation Industry Corp. of China (AICC), with more than 400,000 employees.

The Chinese defense industry consists of the following conglomerates:

- China National Nuclear Corporation (CNNC)
- China Nuclear Engineering and Construction Corporation (CNECC)
- Aviation Industry Corporation of China (AICC)
- China Aerospace Science and Technology Corporation (CASTC)
- China Aerospace Science and Industry Corporation (CASIC)
- China State Shipbuilding Corporation (CSSC)
- China Shipbuilding Industry Corporation (CSIC)
- China Ordnance Industrial Group Corporation (COIG)
- China Ordnance Equipment Group Corporation (COEG)
- China Electronics Technology Enterprise Corporation (CETC)
- Commercial Aviation Corporation (COMAC)

These conglomerates are not controlled by the PLA. They are civilian entities under the authority of the State Council and its subordinate organ SASTIND. The conglomerates and their subordinate companies are contracted by the PLA to produce military items. The conglomerates are crucial to the future development of the PLA, and to China’s ability to develop its own modern weapons and become an independent dealer of the international arms market. Two of the conglomerates responsible for the aviation industry and the shipping industry, and who are main contributors to the modernization of the PLA, will be analyzed in the following.

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**Aviation Industry**

China has produced her own aircraft since the 1960’s, but the industry has always struggled with a lack of know-how, inefficiency, and low rate production, and has until recently not produced an aircraft that was comparable to western standards. However, in recent years the aviation industry has changed its strategy to improve R&D, innovation, quality assurance and general aviation know-how. The Chinese aviation industry has gone through several major re-organizations in the past two decades. In 1993, AVIC was created to develop the market economy and expand international collaboration in aviation programs. It exercised control over all national aircraft, aero engine and component manufacturing plants and employed 500,000 workers. AVIC of the 1990’s was a monster organization, which encountered severe problems in moving prototypes into production, resulting in long development phases, heavy program delays, and low production runs. Western analysts estimate that in the 1990’s, AVIC grew to 600,000 workers, but was only able to produce a few dozen aircraft a year, mainly J-8II and J-7, both of a 1960’s and 1970’s vintage. Despite significant investments into R&D, the industry failed to generate technological breakthroughs and continued to rely heavily on import of foreign technology and know-how. The PLA, despite AVIC’s development of four different types of fighter aircraft, was unable to rely on domestic production. They went shopping in Russia and bought hundreds of Su-27 and Su-30 fighters to boost their capabilities quickly. By purchasing fighters abroad, China not only sought a quick boost of their military capabilities, but also sought a technology transfer to improve their own know-how.

AVIC’s response to this unsatisfactory situation was another top level re-organization. In 1999, in an effort to become more competitive, AVIC was split up into two new conglomerates: AVIC 1 and AVIC 2. AVIC 1 became responsible for fighter aircraft (J-10, J-11B, H-6), commercial aircraft, jet-engines, and airborne weaponry, and employed 240,000 workers. AVIC 2 became responsible for helicopters, transport aircraft, trainers, and electronic warfare aircraft, and employed 210,000 workers.

China went to great lengths to improve its know-how in the production of fighter aircraft, even to the extent that they took very controversial actions to obtain quick results. In 1995, China and Russia entered a Su-27SK Fighter Technology Transfer Agreement, by which Russia would supply first 95 Su-27SK and an additional 105 sets of parts of Su-27SK to be assembled in China with Russian assistance. All core component parts, including engines, radar systems and avionics equipment,

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866) J-7, J-8, JH-7 and J-10.
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were to be supplied by the Russian company.\textsuperscript{868} But in 2004, the Chinese notified the Russians that the 105 sets of Su-27’s were no longer required. Not long after, Russia discovered Chinese attempts to acquire component parts and production blue prints through illegal means, and in 2005, China gave an order for the import of AL-31F jet engines used in the Su-27.\textsuperscript{869} Following that, the Russians discovered that the Shenyang Aircraft Company of AVIC 1 was manufacturing a J-11B fighter that outwardly looked remarkably similar to the Su-27. The Chinese claimed it was a newly designed fighter, but the Russians believed the J-11B was a copy of the Su-27SK.\textsuperscript{870} It was difficult for Russia to prove, since the J-11B had enhanced capabilities to the Su-27SK. The J-11B was fitted with Chinese produced radar and had offensive capabilities, whereas the Su-27SK is only an air defense fighter.\textsuperscript{871} The technology transfer that took place in this case has been significant in that it enabled China to produce a completely new indigenous fighter in record time. One major problem that China has had with this project, is that China has not been able to produce a reliable jet engine for the J-11B, and so far has had to rely on Russian supplies of AL-31FN engines.\textsuperscript{872}

\textbf{Strategic International Fighter Development in Asia}

A good relationship with Russia on the issue of combat aircrafts is important to China, as it could enable China to acquire combat aircraft more sophisticated than what China can produce herself. Russia is developing aircraft, such as the SU-35, and is updating the Su-27 and Su-30, which will be a generation more advanced than the Chinese Su-27SSK and Su-30MKK/MK2, or the Chinese developed J-10. Russia also has the Su-33, which is capable of operating from aircraft carriers - a capability China needs for its future carriers. A good relationship with Russia will not only allow China to acquire the latest generation of fighters, but it could also boost China’s technological know-how and domestic production.

However, Russia seems to be at a cross roads, where the country is about to decide on future partnerships for combat fighter development. The issues are complicated and of strategic importance, as the result will set the stage for strategic air power industrial relations for years

\begin{itemize}
\item \textsuperscript{868} Andrei Chang, “Russia Upset by China’s Imitation Fighter”, UPI Asia Online, 25 April 2008, (http://www.upiasiaonline.com/Security/2008/04/25/russia_upset_by_chinas_imitation_fighter/5808/).
\item \textsuperscript{869} Ibid.
\end{itemize}
to come. The main parties in the strategic conundrum are Russia, China, India and Pakistan. To understand the complicated issues between the states, it is helpful to deal with one aircraft manufacturing relationship at a time.

- **Russia – China.**
  The Su-27/J-11B copy accusation has caused a disruption in the technological cooperation between Russian and China since 2006 and onwards, and resolving the issue seems problematic, as contradictory messages emerge. On the one hand, Russia and China signed an intellectual property rights agreement on 11 December 2008 to stop China copying Russian weaponry, and the director general of Sukhoi Aircraft Manufacturer Mikhail Pogosyan said that Russia and China are to boost their cooperation in combat aircraft production, in particular the licensed production of Su-27 and Su-30 in China. On the other hand, two months later, on 10 February 2009, Anatoly Isaikin, General Director of Rosoboronexport, the main Russian weapon export company, said that arms export from Russia to China could shrivel from 40 percent of value of Russian arms export to a mere 10 percent, which suggests that Russia is no longer willing to sell its most advanced fighters to China, due to the risk of China copying the Russian products. Even though Russia still agrees to sell other weapons to China, this is evidence of a very strained relationship between Russia and China. After the global economic downturn in 2008, the Russian weapons industry is severely short of finances, and refusal to sell the latest and most modern aircraft to China is an indication that Russia sees China as a future competitor on the arms market, or that Russia does not want to make its southern neighbor too strong, too fast. The Chinese have begun to export their fighters to Pakistan, and seek to get their share of the international market for fighter aircraft, which makes China a future competitor to Russia, rather than a future strategic partner in arms development.

- **Russia – India.**
  Russia has been one of the main weapons suppliers to India for many years, and in November 2007, an Indo-Russian inter-governmental agreement was reached to jointly develop a 5th Generation stealth
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The fighter, which will be produced in two versions, is expected to be inducted in 2017. The cooperation between Russia and India is a result of Russia’s desire to acquire a partner to share funding of the expensive fighter development, and of India’s desire to acquire fighter aircraft know-how. This cooperation also makes it complicated for Russia to engage in a similar cooperation with China, who is likely to sell the technology to Pakistan, a main opponent of India. China and India have unresolved border issues and the Indian – Russian fighter development cooperation has the potential to provide India with a fighter that will be more advanced than any fighter China currently can produce indigenously.

- China – Pakistan.
  India and Pakistan have very strained relations, but China and Pakistan have shared good relations since 1950. For many years, China has been a main supplier of military arms to Pakistan, and is suspected of having been involved in Pakistan’s development of a nuclear bomb. For Pakistan, the close relationship with China is a security against India, and for China, Pakistan is a check against India, with whom China has unresolved border issues. In recent years, Pakistan has asked the US to fund and deliver its combat fighters, but the US associated political demands to an arms deal which made it less attractive to Pakistan to acquire its weapons from the US. Pakistan has therefore acquired 42 JF-17 combat fighters from China and has ordered the delivery of an AWACS capability by 2012. Pakistan has also ordered 36 JF-20, an export version of the indigenously produced J-10. The aircraft, which will be delivered in 2014-15, will be the enhanced J-10B, which is currently flying as a development prototype. There are broad speculations among defense analysts across the world that China has offered the J-11B to Pakistan as well. Chinese export of the J-11B is precisely what Russia is trying to avoid. It is an improved copy of the Russian Su-27SK, and a serious competitor to Russian aircraft on the export market.

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An overall view on these tendencies points towards the development of two general fighter development alliances; China-Pakistan and Russia-India, and at the core of this is the emerging competition between the Russian and the Chinese aviation industry, and it seems increasingly difficult for the Chinese aviation industry to acquire further technology transfer from abroad. AVIC will therefore have to invest heavily in their R&D and develop and produce their own combat aircraft. AVIC 1 and AVIC 2 have not been able to close the technology gap to the foreign aircraft producers. The structure of AVIC 1 and AVIC 2 were designed to increase competitiveness, but because the two conglomerates were focused on different types of aircraft, there was no competition, hence the lack of motivation for optimizing and improving the production. However, competition will not come from within China, but will come from abroad.

Change in the Aviation Industry Development Strategy

The Chinese have opted for a new strategy to boost their aircraft production capabilities. In the past, advances in military aircraft development were to spearhead the aviation industry, and civilian aircraft development was to benefit from the advances in military technology. However, in recent years there seems to be a major change in this strategy. The Chinese military industry has been suffering from an arms embargo from the United States and the European Union, which has effectively prevented China from obtaining know-how of aviation design and manufacturing procedures. China has now decided to focus on the production of civilian aircraft, and is aiming at the world market. China wants to become a world leader in civilian aviation in competition with major aircraft companies like Boing and Airbus. China has decided to merge AVIC 1 and AVIC 2 into one big conglomerate, the Aviation Industry Corporation of China (AICC), in order to consolidate and pool all its manufacturing resources. 886 The group will run nearly 200 subsidiaries, own assets of more than 290 billion RMB and have 400,000 employees. It will cover 10 business sectors, including defense fighter aircraft J-10, F-11B, FC-1, JH-7, J-8, long range bombers H-6, aircraft engines, civilian and military helicopters, including attack and transport helicopters, commercial aircraft, trade and asset management. 887 Under AICC, there will be two companies; AVIC Defense and AVIC Aircraft. AVIC Defense will have 60,000 employees and will be responsible for producing military fighters. 888 AVIC

Aircraft will be responsible for the production of commercial aircraft, and will go through a complete restructuring of its subordinate industries, and will model its organization similar to Airbus, where different industries specialize in different parts of the aircraft, which will finally be assembled at one assembly plant. AVIC Aircraft will be a prime competitor to COMAC. The AVIC Aircraft program for commercial aircraft development is very ambitious. The aim of the program is to reduce China’s reliance on overseas suppliers of commercial aircraft by producing its own aircraft of western standards. AVIC Aircraft has already produced its first medium sized regional commercial jet (ARJ21), and is planning to develop and produce two Jumbo jet size aircraft, the CS2000 with 200-300 seats, and the CS2010 with 150-200 seats. AVIC intends to seek US and European certification for all its future aircraft, so that China will be able to export aircraft overseas, and to achieve this, AVIC has to adopt western standards for quality management systems. AVIC started to build its quality management system in 2001. AVIC got a double western quality management certification in 2004, and by September 2007, 80 percent of all AVIC enterprises had achieved a western 6S Quality Management certification, with the remaining 20 percent on their way to achieving it as well. This achievement has brought AVIC tremendous success. AVIC subordinate companies have been hired as subcontractors to western companies for the development of parts of the aircraft, or for the assembly of aircraft, and in 2006, the subcontracting had a value of $360 million. AVIC is targeting revenues of 1 trillion RMB ($146 billion) by 2017.

Technology and Knowledge Transfer to the Military Production
The separation of military and civilian aircraft production into two new enterprises, AVIC Aircraft and COMAC, will allow enhanced corporation with the civilian aircraft industry in the west, which was impossible due to the weapons embargo. COMAC is a mega-project aimed at propelling China into

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the top tier of the world’s advanced technological powers by 2020. The Chinese aviation market is expected to acquire more than 3000 passenger jets from 2008 to 2027, and to obtain access to this potentially lucrative Chinese market, western aircraft manufacturers are willing to outsource production to China or enter into a production corporation with the Chinese industry. The campaign to improve the civilian aircraft production to modern western standards is comprehensive, and the Chinese have sought western cooperation and partners in almost all phases of aircraft production that over time will improve the Chinese aviation design and production knowledge, which in turn will facilitate a boost of the military aircraft and weapon design and production. To illustrate the comprehensive program, the following is an incomplete list of cooperation and partnerships that AICC has with the foreign aviation industry that in one way or another will improve AICC R&D, as well as improve their aircraft development and the production of both civilian and military aircraft.

- Aircraft design software. AVIC 1 and its R&D subsidiary First Aircraft Institute (FAI) has bought LMS Virtual.lab aircraft design software from LMS International, a Belgian aerospace design company. This will enable AVIC to design aircraft using the most modern design techniques and standards, and AVIC has used the software to design the ARJ21. This will not only improve AICC design capabilities, but will also provide AICC with knowledge of Computer Aided Design software in the aviation industry, and will enable China to develop their own design software in the long run. Some Chinese aircraft manufacturers use the French aircraft maker Dassault’s CATIA 3D design software, which enables rapid production of complex, three-dimensional designs.

- Composite Materials. Airbus and the Chinese Harbin Aircraft Industry, under AICC, have entered a joint venture for the production of composite materials for the new A350 wide body aircraft. This will also provide AICC with know-how on composite materials for aircraft production that can also be used in fighters, missiles and the space industry.

- Precision machinery. China has acquired modern aircraft manufacturing machinery from Russia, Japan, Sweden, and the United States. Sweden’s Avure Company sold China eight modern high-power presses to fabricate aluminum aircraft parts. Lately, China has emerged as a major producer of state-of-the-art machinery tools.

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Jet engines. China has been producing jet engines for military purposes for years, but the engines have had poor performance, and AVIC has not managed to overcome the problems. China has now decided to start producing jet engines for civilian aircraft, and has created the AVIC Commercial Aircraft Engine Co. Ltd, which will research, design and produce, sell, maintain and service jet engines. The purpose is to reduce the reliance on foreign suppliers and to break the monopoly of foreign suppliers of jet engines such as GE, Rolls Royce, and Pratt & Witney Group.\textsuperscript{899} Paradoxically, at the same time, Rolls Royce and China’s Academy of Sciences have signed a Memorandum of Understanding (MOU) to jointly develop aircraft engine materials that can withstand higher fuel combustion temperatures.\textsuperscript{900} This venture may not only enable China to produce commercial jet engines, but the engines will also be usable for the medium and heavy military transport aircraft project that China has. On top of that, this program may also assist AICC in overcoming the problems they have encountered in designing combat aircraft jet engines.

Aerodynamic Wind tunnel test. AVIC 1 and its R&D subsidiary First Aviation Institute (FAI) has been visiting DNW, the German-Dutch Wind Tunnels, which is a non-profit foundation established by the German Aerospace Center DLR and the Dutch National Aerospace Laboratory NLR. In August 2007, DNW performed wind tunnel tests of models of the ARJ21. The Chinese were very impressed with the DNW facilities, and want to extend the cooperation with DNW testing other commercial aircraft.\textsuperscript{901} By gaining access to these facilities, the Chinese will obtain knowledge of how they work, and will eventually be able to design or build their own wind tunnels to achieve similar capabilities that can be used to design and test the aerodynamics of military aircraft and weapons.

Quality Management. The main Chinese combat aircraft producers are all AICC companies with common R&D and organized knowledge sharing. Shenyang Aircraft Company (J-11B), Chengdu Aircraft Company (J-10) and Xi’an Aircraft Company (H-6 bomber) have all passed the western Nadcap quality management audits, which have improved their aircraft manufacturing standards to western standards. This will make future fighters and weapons they produce much more robust and reliable, and will enable China to export their products.\textsuperscript{902}

Recruitment of foreign executives. AVIC has realized that one reason for the failure to improve quality, management and production, is a lack of skills among its top management in the companies. AVIC has therefore decided to recruit top level aviation industry managers from abroad for the commercial

part of the industry. Considering the tradition of secrecy within the Chinese aviation industry, this is a highly controversial move, which is designed to boost implementation of a western management culture, for the purpose of improving the industry.

- Airbus has built an A320 final assembly line at Tianjin Airport, which is the first outside Europe. Major parts of the plane will be assembled in Hamburg, Germany, before being shipped to Tianjin for final assembly. Airbus also signed an agreement with Xi’an Aircraft Industry Company for A320 wing equipping and test. As a part of the agreement, Xi’an agreed to build a factory next to the final assembly line in Tianjin. This cooperation will give AICC knowledge of western standards for final assembly of aircraft, including procedures, factory design, as well as testing equipment and procedures - knowledge that can be expected to be transferred to the military aircraft production line. An Airbus official has acknowledged that this project will help China in mastering “Just-in-Time” manufacturing techniques, advanced inventory control and essential quality control.

- Helicopters. In 2004, the French based Eurocopter, which is a part of EADS (Airbus), signed an agreement with AVIC II on a Cooperation Framework Agreement for the development and manufacturing of new advanced helicopters for the civilian market. Helicopters are about to become an extremely big market in China, and Eurocopter controls more than 40% of the Chinese market. In 2007, they sold for over $100 million in China. Eurocopter and the Chinese AVIC have jointly developed the civilian helicopter EC175, and they are expecting to sell up to 200 helicopters a year in the second half of the next decade. China is expecting to acquire up to 3000 helicopters in the next couple of decades. In December 2005, Harbin and Eurocopter signed an agreement for the development of the EC175/Z-15 medium sized helicopter, which will be used for both civilian and military purposes. Production will take place in both Europe and China. This cooperation has undoubtedly transferred know-how to the Chinese helicopter industry, which is also developing transport and attack helicopters for the Chinese military. The Chinese have now improved their knowledge of helicopter manufacturing to such an extent that they in January 2009 announced the creation of China Aviation Industry Helicopter Co. Ltd (CAIHC) in Xinhua. The factory will produce helicopters entirely developed in China.

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China with Chinese intellectual property rights, which is evidence of how technologically mature the Chinese industry has become.\textsuperscript{910} The Chinese now has three large helicopter manufacturers; CAIHC, Harbin Aircraft Industrial Group and Changhe Aircraft Industries Group. By 2010, these three entities will form an industrial chain with CAIHC at the center.\textsuperscript{911} This will link the R&D and production of both military and civilian helicopters, which will ensure a bi-directional transfer of know-how between the production of military and civilian helicopters in China. In July 2009 China announced that by the end of 2009 a new 13 ton civilian transport helicopter, the AC313, will make its debut flight. The helicopter is independently researched and developed by the Chinese aviation industry and its performance will meet advanced international standards.\textsuperscript{912}

- The Russian arms maker Oboronprom and China’s AVICopter have signed a deal to jointly develop a heavy helicopter. The project is financed by China, but Russia owns the blueprints to the helicopter. With Russian assistance, China is going to design and produce the 30 ton helicopter, which will be based on the design of the Mi-46.\textsuperscript{913} The agreement is based on the production of a civilian heavy helicopter, but military transport helicopters are not that different from civilian helicopters, and can easily be modified for military purposes.

The Chinese aviation industry has for many years struggled to catch up with the western aviation industry, which is why the PLA has been forced to acquire their modern combat aircraft in Russia. However, the emergence of the J-10, which is almost at the standards of western fighters, shows that AVIC has improved their R&D and manufacturing skills. China is investing heavily in the aviation industry, and the change of strategy to focus on civilian aircraft R&D, development and production, combined with the adoption of western manufacturing standards and quality assurance, is likely to result in improvements of aircraft production, and will bring them close to western standards. If the Chinese are successful in recruiting, the implementation of the program will be supervised by Western managers. Because there is a deliberate bi-directional transfer of know-how between the civilian and military aircraft production, this is likely to transform the industry in general. However, this is also necessary if China is to keep up with the world. It is unlikely that China will be able to acquire the most modern Russian combat aircraft due to Russian fears of Chinese copying their technology, and Russia has entered into a partnership on combat aircraft development with India, who is likely to insist that China does not gain access to the developed technology. The Chinese


military aviation industry is therefore isolated in the world, whereas the civilian aviation industry has several strategically important global partnerships. The Chinese commercial aviation industry will become the locomotive of the Chinese aviation industry, and this will also lead to the development of new sophisticated combat aircraft.

**Military Ship Building Industry**
Chinese shipbuilding has achieved impressive growth over the course of the past decade, and China's shipbuilding industry (civilian and military) is now ranked third in the world after Japan and South Korea. In 2006, the 3000 Chinese shipyards delivered 14.52M dwt, which is equivalent to 22.5% of the world market. Orders for 2007 totaled 42.51M dwt, up 150% from 2006. The vast majority of these are civilian vessels built for export to international shipping companies. 431 of the shipyards are large in size. However, military shipbuilding is concentrated on 9 shipyards organized under two conglomerates; the China State Shipbuilding Corporation (CSSC) and China Shipbuilding Industry Corporation (CSIC).

**China State Shipbuilding Corporation (CSSC)**
CSSC has a total of 60 sole proprietorship enterprises under its wings, including 30 shipyards and industrial enterprises, 10 Research & Development Institutes, 11 shareholding companies and 3 listed companies. CSSC produces military and civilian ships for domestic use and export, and is the main producer of military surface vessels. Of the 30 shipyards under CSSC, the following six are responsible for building military vessels.

- Jiangnan Shipyard (052C/B, 053H/H1, 039G1)
- Qiuxin Shipyard (022, 037-IS/IG, Electronic Intelligence ships)
- Hudong-Zhonghua (054A, 071, 053H3, 072-III, 073-IV, 052)
- Guangzhou (920 hospital ship, cargo ship, 051)

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916) CSSC website, ([http://www.cssc.net.cn/enlish/jtcy1.php](http://www.cssc.net.cn/enlish/jtcy1.php)).
917) Tai Ming Cheung, *Fortifying China; The Struggle to Build a Modern Defense Economy* Cornwell University Press, 2009, pp. 121.
918) Subsidiary of Jiangnan Shipyard after the Asian financial crisis in the 1990’s, but known as Qiuxin Shipyard in the public Domain ([http://www.globalsecurity.org/military/world/china/qiuxin.htm](http://www.globalsecurity.org/military/world/china/qiuxin.htm)).
CSSC shipyard capacity is about to undergo a significant change. The city of Shanghai is hosting the world exhibition EXPO 2010, and in order to provide space in the center of Shanghai, CSSC agreed to move two shipyards\textsuperscript{919} to the Changxing Island just outside Shanghai. The shipyards that are to be moved are Jiangnan Shipyard and its neighboring Qiuxin Shipyard, a subsidiary of Jiangnan. They will form a new shipyard on the Island, known as the Changxing Shipyard. This new shipyard will, when finished, become the largest shipyard in the world, with the capacity of seven large boatyards manufacturing 8 million dwt of ship by 2015.\textsuperscript{920} Changxing will be able to build ships up to 300,000 dwt. Jiangnan Shipyard and Quixin are very productive shipyards of military vessels, and it is likely that Changxing Shipyard will continue the production of naval vessels. There are many speculations that a future aircraft carrier will be built at Changxing Shipyard, and it is a natural choice: Changxing has the capacity to build such a large ship, and its favorable location on an island makes it easier to maintain military secrecy around the project, which the PLA will undoubtedly seek.

**China Shipbuilding Industry Corporation (CSIC)**

CSIC is a major state owned shipbuilding enterprise with 46 industrial subsidiaries, including 7 major shipyards. It has 28 R&D institutes with more than 30,000 engineers and a total workforce of 140,000.\textsuperscript{921} The main focus of CSIC is civilian shipbuilding, but it still holds an important part of the military shipbuilding, as it is responsible for the type 051C Luzhou destroyers, as well as for the production of all nuclear and diesel-electric submarines. The shipyards responsible for the production of military vessels are:

- Dalian Shipyard/Dalian New Shipyard (051B/C, 072-III, renovation of Varyag)
- Bohai Shipyard (Nuclear submarines 094, 093, 092)
- Wuchang Shipyard (Diesel-Electric submarines 039A/B/G/G1, 035G/ ES5E)

\textsuperscript{920} People Daily Online, “Shanghai to be the world’s largest shipbuilding base”, 14 September 2006, (http://english.people.com.cn/200609/14/eng20060914_302852.html).
Military Shipbuilding

Over the course of the past 10 years, CSSC and CSIC have been very productive in building naval vessels. The following table shows the production of larger military vessels for the PLA Navy. CSSC and CSIC have, over a period of ten years, built 24 submarines, including 2 nuclear submarines, 6 destroyers, 12 frigates and a large number of smaller combat ships, ships for amphibious landings and support ships. In total, in the ten years from 1999 to 2008, CSSC and CSIC have built 139 naval vessels for the PLAN, and in addition, CSSC has produced 2 F22P Corvettes for export to Pakistan in 2008, with a third on its way in 2009.

<table>
<thead>
<tr>
<th></th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuclear submarines</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
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<td>2</td>
</tr>
<tr>
<td>Diesel-electric submarines</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>Destroyers</td>
<td>3</td>
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<td>1</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Frigates</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corvettes</td>
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<td></td>
<td></td>
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<td>Minesweepers</td>
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<td></td>
<td></td>
<td></td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Missile Patrol Boats</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>Submarine chasers</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
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<td>11</td>
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<tr>
<td>Large landing platform</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Medium Landing platform</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>Landing ship</td>
<td>2</td>
<td>3</td>
<td>6</td>
<td>8</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>21</td>
</tr>
<tr>
<td>Supply ships</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Hospital ships</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Total per year</td>
<td>12</td>
<td>8</td>
<td>9</td>
<td>6</td>
<td>8</td>
<td>20</td>
<td>15</td>
<td>21</td>
<td>20</td>
<td>20</td>
<td>139</td>
</tr>
</tbody>
</table>

Table 1 CSSC and CSIC shipbuilding for PLA Navy from 1999 – 2008.\(^{922}\)

96 of these ships have been built in the last half of this period with about 20 ships a year, and apart from a little dip in production in Jiangnan and Qiuxin Shipyards because of their move to Changxing Island, all indications point towards a continuation of this extensive shipbuilding program. By the time research for this report stopped in May 2009, the shipyards had launched another nuclear submarine, 3 destroyers, 2 frigates and one supply ship. In addition to this, older naval vessels are going through overhaul and modifications with installation of more modern equipment.

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\(^{922}\) Data obtained from multiple sources including Jane’s Defence, Sinodefence.com, Military Balance 2009.
Ship Construction Technology and Management

That China has achieved such an impressive market share of commercial shipbuilding is not only because Chinese ships are cheaper; the ships also have a reasonably high level of quality to justify such an expensive acquisition, considering that the commercial shipping is heavily reliant on sustainability and continued operations. This suggests that Chinese commercial shipbuilding is of a reasonable standard. However, the components used in the ships are not all Chinese. Despite the advances the Chinese shipbuilding industry has achieved, there is still a long way to go to reach the technological and manufacturing levels of its international rivals. In 2006, Zhang Xiangmu, a senior official with the Commission of Science Technology and Industry for National Defense (COSTIND), which administers shipbuilding affairs in China, said that China still lags far behind the top shipbuilding countries in many ship functions, in structural design and technology. It is leagues behind the other players in many key technologies, with no domestic brands to provide support products for exported ocean ships. A lot of key components simply cannot be manufactured in China at the present time. The country’s capacity to provide the products required for high-tech and high added-value ships is woefully insufficient. He pointed out that 88.4% of ships built and exported in the first six months of the year used components outsourced from abroad. Overall, at least 60% of shipboard equipment is imported from overseas. Most of the naval hardware being produced in China is at least one or two generations behind its counterparts in the West.

Both naval and commercial shipbuilding have benefitted from improvement in areas such as ship design techniques, shipyard management and quality assurance, welding techniques etc. Chinese shipyards are now using advanced modular construction methods and advanced design software, and their technical level management ability and anti-risk capability have improved. Shipyards are also using indigenously produced, digitally controlled 7 axis precision machine tools, which are used to make advanced skewed propellers. However, a naval vessel is a lot more complex to build than a commercial ship, because of the many extra aspects that have to be taken into account on a wartime vessel, such as engine power and maneuverability of the ship, damage limitation measures, stealth, integration of advanced air and surface radars and weapon systems, an extensive communications suite and C4I integration, helicopter operations and logistics etc. These are all complex is-

sues that challenge the Chinese ship designers and component producers. From 2000 to 2005, the Jiangnan shipyard in Shanghai built four new 7,000 ton destroyers based on stealth design and with improved air defense and anti-submarine capabilities. They were serial produced, which was a new concept for Chinese vessel production.\(^{927}\) Two of these were the Type 052C Air Defense ships that were manufactured using modular production techniques and modern quality control, which saved construction time and costs in the programs.\(^ {928}\)

**Dependency on Foreign Parts**

Chinese weapon systems on naval vessels are either bought abroad or indigenously produced, and if produced at home, they are either produced under foreign license agreements or reverse engineered from weapons bought abroad in the past. This holds true for almost all essential weapons and sensors on the ships, such as air defense surveillance and tracking radars, anti ship missiles, sonar systems, C4I systems and ship propulsion systems. One such example is the Type 052C Luyang-II class air defense destroyer, which was built from 2003 to 2005, largely based on indigenous technologies, but produced with help from abroad.\(^ {929}\)

- Type 52C has a Russian built Band Stand fire-control radar for anti-ship missile and main gun.

- **Air Defence Missile.** Type 052C is also equipped with HQ-9 Air Defense missiles, which originally have been based on the US Patriot Air Defense Missile, using Track-via-Missile technology.\(^ {930}\) When China obtained the S-300PMU air defense missiles from Russia in the 1990’s, the HQ-9 were modified with certain S-300PMU technologies to improve the design. The system was originally designed for land operations, but the Chinese adopted it for naval vessels as well.

- **Propulsion.** Main propulsion is two DA80/DN80 gas turbines made in the Ukraine. It is also equipped with two smaller Chinese made engines that are copies of foreign engines.

Relying on foreign imports and licensed production will never bring China to the technological forefront, and that is why it will still be some years before China closes the technology gap. China is


investing large sums of money in R&D, but we still have not seen innovative new designs as a result of this, and until that happens, China will always be behind. If China is to obtain levels of sophistication equivalent to the West and Russia, then China will have to catch up with their R&D on their own, and should preferably also invent capabilities that the West does not have. Despite shortcomings, however, with rapid changes in manufacturing procedures and quality assurance, the Chinese shipbuilding industry has shown willingness to change. China’s shipbuilding industry has become more innovative, and owns an increasing amount of intellectual property rights achieved through technical innovation.\(^{931}\) With the amount of money spent on R&D, there is no doubt in this author’s mind that China will one day catch up, but it will still be a couple of decades.

**The Global Economic Downturn**

China’s shipbuilding industry has been hit hard by the global economic downturn, as shipping companies from all over the world have started to cancel orders for shipbuilding given to Chinese shipyards. Expectations in China are that shipbuilding orders will decline by up to 50% from 2008 to 2009,\(^{932}\) and this will undoubtedly have a severe effect on China’s shipbuilding industry. There are already signs of consolidation of the industry, where large shipyards are buying up smaller yards, and this will cause a delay to China’s strategic plan for the development of the shipbuilding industry. However, there are no signs that it will affect the development of Changxing Shipyard, the major shipyard outside Shanghai. The Chinese government has approved a stimulus package for the shipbuilding industry to minimize cancellation of orders for new ships,\(^{933}\) and it can also be expected that the naval vessel building program will be maintained, if not boosted, in support of the shipyard industry.

CSSC and CSIC still have a long way to go in terms of closing the technology gap to the West. However, with the enormous resources that are being spent on R&D every year, it is to be expected that this will happen eventually. Chinese reliance on copying and reverse engineering is slowly changing, with China achieving more and more intellectual property rights every year. The annual production of naval vessels is around 20 per year. This includes 3-5 destroyers and frigates, 2-4 nuclear and conventional submarines and a range of missile patrol boats and support ships. In spite of the commercial side of shipbuilding seeing a significant downturn, it can be expected that the naval shipbuilding program will continue, not least because it will be seen as a part of a stimulus package for the industry.


Innovation and the Future

Innovation has been limited in the Chinese industry in the past, and changing that is a process that will take many years. At the end of the day, the innovative steps that will close the technological gap will necessarily be taken by a relatively small number of leading scientists. Future development to a large extent depends on the working culture and ethos these people are subjected to. The introduction of financial incentives and market economy principles may lead to such a change. There are signs that more innovation is taking place. In the 1990’s, the Chinese government started to focus on intellectual property rights, something which is fundamental to the stimulation of an innovative culture, and since then there has been a gradual strengthening of the patent regime. In China, the defense industry has become a front-runner when it comes to patent applications. In 2004, military industry corporations accounted for 20% of all patent applications. In 2004, China Ordnance Equipment Group (COEG), China Electronic Technology Enterprise Corp. (CETC) and Aviation Industry Corp. of China One (AVIC 1) all together applied for 862 new patents, and were issued 824 patents. This is a significant number of patents, which suggests that these companies have a strong R&D organization. It is difficult to assess how quickly the Chinese armed forces will develop, but the American think tank RAND has made a study of the Chinese military industry and estimates that the PLA by 2025 will have defense resources comparable to those that are currently available to the United States.

Industrial Espionage

Every year the U.S. Office of National Counterintelligence publishes a report to Congress on Foreign Collection and Industrial Espionage. In the last years China has been reported as a main country guilty of industrial espionage against the U.S. The technology areas that are being targeted by China in 2007 and 2008 were information technology, space, aerospace, imaging, night vision, U.S. Navy warship technical data, missile technology, microwave technology, military source codes and trade secrets. The reports from the Office of National Counterintelligence reveal information on industrial espionage, which has been discovered. What is not known is how much industrial espionage

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China conducts, which is never discovered. Chinese espionage is not limited to the classical tactics of spying. China is also using sophisticated computer software to steal documents from hundreds of government and private offices around the world via the internet.\(^{938}\) The effect of successful espionage is that R&D of new technologies may be accelerated and that China may be able to field more sophisticated weapon systems sooner than it otherwise would.

**Arms Import**

In spite of the heavy investments in the Chinese military industry, China was the largest importer of conventional weapons in the world in the period 2004 to 2008, with an import equivalent to 11% of the global market.\(^{939}\) Russia supplied 92% of the arms, France supplied 3% and the Ukraine 2%. The SIPRI Arms Trade database for 2008, which registers all arms trade, has made the following list of entries on Chinese import of arms.

<table>
<thead>
<tr>
<th>Supplier (S)</th>
<th>No. ordered</th>
<th>Weapon designation and description</th>
<th>Year of order/license</th>
<th>Year of delivery</th>
<th>No.</th>
<th>Comments(^{940})</th>
</tr>
</thead>
<tbody>
<tr>
<td>France (S)</td>
<td>4</td>
<td>Diesel Engine</td>
<td>2006</td>
<td>2008</td>
<td>4</td>
<td>For Type 071 AALS</td>
</tr>
<tr>
<td>Germany (S)</td>
<td>..</td>
<td>Diesel Engine</td>
<td>1989</td>
<td>1989-2008</td>
<td>220</td>
<td>For Type 98 and Type 99 tanks</td>
</tr>
<tr>
<td>Russia (S)</td>
<td>4</td>
<td>IL-78M/Midas tanker transport aircraft</td>
<td>2005</td>
<td>..</td>
<td></td>
<td>Status uncertain</td>
</tr>
<tr>
<td>Russia (S)</td>
<td>(34)</td>
<td>IL-76M/Candid B transport aircraft</td>
<td>2005</td>
<td>..</td>
<td></td>
<td>Status uncertain</td>
</tr>
<tr>
<td>Russia (S)</td>
<td>..</td>
<td>AK-630 30mm Naval AA Gun</td>
<td>2002</td>
<td>2004-2008</td>
<td>69</td>
<td>For Type-054A Jiankai-I, Type-022 Houbei and Type-071 AALS.</td>
</tr>
<tr>
<td>Russia (S)</td>
<td>8</td>
<td>S-300PMU-2/SA-10E SAM system</td>
<td>2006</td>
<td>2007-2008</td>
<td>8</td>
<td>For Type 054A Jiangkai-II and Type 071 AALS.</td>
</tr>
<tr>
<td>Russia (S)</td>
<td>5</td>
<td>AK-176M 76mm Naval Gun</td>
<td>2005</td>
<td>2007-2008</td>
<td>5</td>
<td>For Type 054A Jiangkai-II and Type 071 AALS.</td>
</tr>
</tbody>
</table>

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Chapter 12

<table>
<thead>
<tr>
<th>Supplier (S)</th>
<th>No. ordered</th>
<th>Weapon designation and description</th>
<th>Year of order/license</th>
<th>Year of delivery</th>
<th>No.</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russia (S)</td>
<td>(100)</td>
<td>AL-31FN Turbofan jet engines</td>
<td>2005</td>
<td>2005-2008</td>
<td>100</td>
<td>For J-10 combat aircraft.</td>
</tr>
<tr>
<td>Russia (S)</td>
<td>(8)</td>
<td>Frigate/Top Plate Air Surveillance Radar</td>
<td>2001</td>
<td>2004-2008</td>
<td>8</td>
<td>For Type-051C Luzhou, Type-052B Luyang and Type 054A Jiangkai-II.</td>
</tr>
<tr>
<td>Russia (S)</td>
<td>(150)</td>
<td>3M-54 Klub/SS-N-27 Anti-ship missile</td>
<td>2002</td>
<td>2005-2008</td>
<td>120</td>
<td>For modernized and new Kilo submarines; probably including 3M14E land attack version.</td>
</tr>
<tr>
<td>Russia (S)</td>
<td>(300)</td>
<td>48N6E2/SA-10E SAM</td>
<td>2006</td>
<td>2007-2008</td>
<td>300</td>
<td></td>
</tr>
<tr>
<td>UK (S)</td>
<td>140</td>
<td>Spey turbofan jet engines</td>
<td>1988</td>
<td>1988-2006</td>
<td>140</td>
<td>For JH-7 combat aircraft.</td>
</tr>
<tr>
<td>UK (S)</td>
<td>(6)</td>
<td>Searchwater AEW aircraft radar</td>
<td>1996</td>
<td>1999-2001</td>
<td>2</td>
<td>For Y-8 AEW and Maritime Patrol aircraft. Uncertain if delivered or used in operational aircraft.</td>
</tr>
</tbody>
</table>

Table 2 Chinese Arms Import by 2008, Source: SIPRI Arms Transfer Data, 2008

The list of Chinese arms import is an indication of the weaknesses in the Chinese military industry. The main categories of products that China imports, rather than produces herself, are naval guns, radars, SAM systems, missiles and jet engines. All very important components in arms production, and this is an indication that even though the Chinese military industry is making progress, there are still major components that China is not able to produce at a satisfactory quality. In order to improve her knowledge on weapons production, and to secure production at home, China has bought a large number of products abroad, which are being produced in China under license agreements.941

<table>
<thead>
<tr>
<th>Licensor (L)</th>
<th>No. ordered</th>
<th>Weapon designation and description</th>
<th>Year of order/license</th>
<th>Year of delivery</th>
<th>No. delivered</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>France (L)</td>
<td>..</td>
<td>Crotale SAM system</td>
<td>1978</td>
<td>2004-2007</td>
<td>34</td>
<td>Produced in China as HQ-7</td>
</tr>
<tr>
<td>France (L)</td>
<td>(12)</td>
<td>Compact 100mm Naval gun</td>
<td>2001</td>
<td>2004-2007</td>
<td>10</td>
<td>Type Type-051C, Type-052 and Type 054 destroyers and frigates.</td>
</tr>
<tr>
<td>France (L)</td>
<td>..</td>
<td>R-440 Crotale SAM</td>
<td>1978</td>
<td>1990-2008</td>
<td>1045</td>
<td>Chinese designation HQ-7. For Type-052 Luhu, Type-051B Luhai, Type-051 Luda-1, Type-054 Jiangkai and Type-053H3 Jiangwei.</td>
</tr>
<tr>
<td>Germany (L)</td>
<td>(4000)</td>
<td>BF8L Diesel Engines</td>
<td>1981</td>
<td>1982-2006</td>
<td>4000</td>
<td>For Armored Personnel Carrier: Type 63, Type-85, Type-89, Type-90, WZ-551. Type-85 Tank destroyer.</td>
</tr>
<tr>
<td>Russia (L)</td>
<td>4</td>
<td>Mineral/Band Stand Surface Surveillance Radar</td>
<td>2005</td>
<td>2007-2008</td>
<td>4</td>
<td>For Type-054A Jiangkai-II frigates.</td>
</tr>
<tr>
<td>Russia (L)</td>
<td>(16)</td>
<td>MR-90/Front Dome Fire Control Radar</td>
<td>2005</td>
<td>2007-2008</td>
<td>16</td>
<td>For Type-054A Jiangkai-II frigates. Used with HHQ-16 SAM.</td>
</tr>
<tr>
<td>Russia (L)</td>
<td>..</td>
<td>9M119/AT-11 Sniper Anti-tank missile</td>
<td>1998</td>
<td>2001-2008</td>
<td>800</td>
<td>For Type-98 and Type-99 tanks.</td>
</tr>
</tbody>
</table>

Table 3 Arms produced in China under License agreements, Source: SIPRI Arms Transfer Data, 2008.

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942) Acronyms used: Numbers in brackets ( ): Uncertainty regarding data or SIPRI estimate, <..>: Data not available or applicable, AA: Anti-aircraft, SAM: Surface-to-Air Missile, AALS: Amphibious Assault Landing Ship, AEW: Airborne Early Warning.
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The production under license agreements in China includes helicopters, naval guns, SAM systems, radars, diesel engines, jet engines and missiles. In addition to this list, Russia and China have jointly developed the HQ-16 (naval version HHQ-16, export MD-2000) air defense missile based on the Russian SA-11 Gadfly. The naval HHQ-16 is launched from a Vertical Launch System (VLS).\textsuperscript{943} This is further evidence that China is far from being self reliant. It will still take years before China’s arms industry is able to produce its own weapons of modern standards.

\textbf{Chinese Weapons Export}

Some of the weapons produced by the Chinese military industry are of sufficient quality to compete on the international market, and the Chinese arms industry is managing to increase its arms sales abroad. China is by no means a large player on the international market, but China is willing to sell to those countries that western countries and Russia are not willing to sell to, especially in Africa. However, as the quality of Chinese weapons is improving, China will become a strong competitor to especially Russia and the Ukraine on the international arms market. SIPRI has recorded the following sales of arms by China on the global market:

<table>
<thead>
<tr>
<th>Country</th>
<th>No. ordered</th>
<th>Weapon designation and description</th>
<th>Year of order/license</th>
<th>Year of delivery</th>
<th>No. delivered</th>
<th>Comments\textsuperscript{944}</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>4</td>
<td>WZ-551 Armored Personel Carriers</td>
<td>2008</td>
<td>..</td>
<td>..</td>
<td>$2.6m deal</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>(10)</td>
<td>C-802/CSS-N-8 Anti-ship missile</td>
<td>(2005)</td>
<td>2008</td>
<td>10</td>
<td>For 1 Jianghu Type510 Frigate</td>
</tr>
<tr>
<td>Ghana</td>
<td>2</td>
<td>MA-60 Transport Aircraft</td>
<td>(2008)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ghana</td>
<td>2</td>
<td>Y-12 Transport Aircraft</td>
<td>2008</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ghana</td>
<td>2</td>
<td>K-8 Trainer / Combat aircraft</td>
<td>2008</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td>(80)</td>
<td>QW-3 portable SAM</td>
<td>2008</td>
<td></td>
<td></td>
<td>Part of a $35m deal; FL-2000B</td>
</tr>
</tbody>
</table>


\textsuperscript{944} Acronyms used: Numbers in brackets ( ): Uncertainty regarding data or SIPRI estimate, <..<>: Data not available or applicable, AA: Anti-aircraft, SAM: Surface-to-Air Missile, AALS: Amphibious Assault Landing Ship, AEW: Airborne Early Warning.
<table>
<thead>
<tr>
<th>Country</th>
<th>No. ordered</th>
<th>Weapon designation and description</th>
<th>Year of order/license</th>
<th>Year of delivery</th>
<th>No. delivered</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iran</td>
<td>..</td>
<td>C-802/CSS-N-8 Anti-ship missile</td>
<td>1992</td>
<td>1994-2008</td>
<td>300</td>
<td>Produced in Iran under license. Iranian designation Tondar or Noor.</td>
</tr>
<tr>
<td>Nepal</td>
<td>1</td>
<td>MA-60 Transport aircraft</td>
<td>2005</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nigeria</td>
<td>12</td>
<td>F-7M Fighter aircraft</td>
<td>2005</td>
<td>2009</td>
<td></td>
<td>$251m deal. F-7NI version, including 3 FT-7NI.</td>
</tr>
<tr>
<td>Nigeria</td>
<td>(20)</td>
<td>PL-9 Short Range AAM</td>
<td>2005</td>
<td></td>
<td></td>
<td>$20m deal. PL-9C version for F-7NI aircraft.</td>
</tr>
<tr>
<td>Pakistan</td>
<td>4</td>
<td>KJ-200 Airborne Early Warning and Control Aircraft</td>
<td>2008</td>
<td>2010</td>
<td>$278m deal.</td>
<td></td>
</tr>
<tr>
<td>Pakistan</td>
<td>(40)</td>
<td>C-803 anti-ship missiles</td>
<td>(2005)</td>
<td></td>
<td></td>
<td>For Jiangwei (F-22P) frigates. HQ-7 version</td>
</tr>
<tr>
<td>Pakistan</td>
<td>(250)</td>
<td>JF-17 Thunder fighter aircraft</td>
<td>1999</td>
<td>2007-2008</td>
<td>8</td>
<td>Developed for Pakistan, incl. production of components and assembly in Pakistan.</td>
</tr>
<tr>
<td>Country</td>
<td>No. ordered</td>
<td>Weapon designation and description</td>
<td>Year of order/license</td>
<td>Year of delivery</td>
<td>No. delivered</td>
<td>Comments</td>
</tr>
<tr>
<td>----------------</td>
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<td>----------</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>(27)</td>
<td>PLZ-45 / 155mm self propelled gun</td>
<td>(2008)</td>
<td></td>
<td></td>
<td>Number could be 54.</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>6</td>
<td>F-7MG Fighter aircraft</td>
<td>(2007)</td>
<td>2008</td>
<td>6</td>
<td>Possible aid; F-7GS version.</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>1</td>
<td>J-11 Air surveillance radar</td>
<td>(2007)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uganda</td>
<td>2</td>
<td>Y-12 transport aircraft</td>
<td>(2007)</td>
<td>2008</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Venezuela</td>
<td>(18)</td>
<td>K-8 Trainer / Combat aircraft</td>
<td>2008</td>
<td>2009</td>
<td></td>
<td>Number could be 24.</td>
</tr>
</tbody>
</table>

Table 4 Chinese arms export. Source: SIPRI Arms Transfer Data, 2008.

The list of arms China has exported within recent years is by no means all inclusive, and Chinese attempt to take a larger share of the arms market is ongoing. In February 2008, Indonesia announced that China and Indonesia had agreed on a joint production of military vehicles, tanks and missiles.\(^945\) China has put its HQ-9 SAM system up for sale, and was promoting the J-10 fighter at the Zhuhai Air Show in November 2008.\(^946\) Delegations from Angola, Nigeria and Venezuela were given exhaustive information on the fighter. However, a sale of the J-10 will either require that China develops a jet engine for the aircraft, or that Russia agrees to sell the jet engine.

Getting a larger share of the arms trade will make the Chinese arms industry more robust, as it will add extra finances to its R&D in the arms industry, which will assist the PLA in improving its own

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The competition with foreign arms dealers will work as an incentive to the Chinese arms industry, the incentive it had been lacking for decades at home.

**Summary on the Chinese Military Industry**
The Chinese military industry is still lagging behind the West, and it has still not managed to independently develop modern sophisticated weapons, but relies on import and license production to support its rapid military modernization program. However, China is investing heavily in modernizing its industry, and has abandoned its old Communist style planning procedures, and has adopted a modern competitive market economic approach with the introduction of incentives. These changes are profound, but will take years to mature and deliver. In the mean time, China will be dependent on imports, mainly from Russia. However, Russia is refusing to sell China its most advanced weapon systems, especially fighter aircraft. The Chinese industry has changed its development strategy, and has entered a range of cooperation agreements with Western companies on civilian products, such as ships, aircraft, engines, software etc. These agreements will provide the Chinese industry with valuable know-how and production technologies, which will inevitably also improve the Chinese weapons industry. As the Chinese products improve in sophistication and quality, they will become more competitive on the international arms market, and increasing sales will contribute to the funding of further R&D and innovation. China still has only a modest share of the international arms market, but that may improve in the coming years as the country becomes more competitive.
13.

Chinese Power Projection beyond Taiwan

Military observers in the Asian region and around the world are following the development of the Chinese military with great interest. The PLA is going through a comprehensive modernization with the introduction of joint doctrine, sophisticated platforms and new precision weaponry. It is a process that is based on an impressive rise of the Chinese economy, as well as large investments in the Chinese military industry. There is good reason to believe that the modernization process will continue in the years to come. China’s long term modernization goal for the PLA is to be achieved by the middle of the 21st century, in about 40 years. What analysts around the world are trying to assess, are the repercussions of this new PLA for the rest of the world. What place is China going to take in the future global security environment, and to what extent can it be expected that the Chinese military will be present outside the Chinese region in 30-40 years? These are questions that it would really only be possible to answer, if we could look into a crystal ball and determine the future political will of the Chinese government, as it interacts with the U.S. and other great powers whilst developing into a regional and global actor. This is of course not possible. What we can do, however, is to determine the criteria and capabilities that are required for the PLA to be able to operate outside China, and then assess whether the PLA currently fulfills these criteria; and if not, are they working towards them? By answering these questions, we can determine if the PLA will have the capability to operate outside of the Chinese region. That is the purpose of this chapter. The scenario, upon which the assessment is made, is a hypothetical strategic deployment of a joint force to an area far away from China with access to the sea. The conflict is a regional war requiring forces of a significant size, equivalent to the U.S. deployment of forces to Operation Iraqi Freedom in 2003, where the U.S. Army deployed about 230,000 troops, and the combined fighter participation was around 735 fighters and 51 bombers. In a Chinese ground force context, this will equate to about 4-8 Group Armies. Importantly, it must be emphasized that this is not a prediction as to whether the PLA will actually be deployed abroad, but merely an assessment as to whether it could deploy, should the political

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948) The size of a Group Army is assessed to be between 30,000 – 50,000 depending on the number of divisions and brigades, source Dennis J. Blasko, “The Chinese Army Today; Tradition and Transformation for the 21st century”, Routledge, 2006, p. 43.
leadership so desire. If the assessment determines that it is possible, this does not mean that it will necessarily happen.949

Why make such an assessment? The reason why such an assessment should be made is that this is exactly what the great powers of the world are doing. The same goes for smaller states, who believe they may one day find themselves in a political confrontation with China. They try to assess what future power projection capabilities China will have, and based on these assessments, they will decide on their own future investments in their military forces. This is the way military balances are maintained, and that is why we must keep an eye on the military modernization in China.

In chapter 8 on the PLA blue water navy, a definition was provided for the capabilities of a blue water navy. The capabilities were defined as (1) A SLOC Navy, (2) MOOTW Navy and (3) a Power Projection (PP) Navy. These definitions will also be used in this chapter. The SLOC and MOOTW definitions fit the capabilities of a blue water navy exclusively, but the definition of a PP Navy included the other services. The definition of a PP navy was as follows:

**A Power Projection (PP) Navy** is a navy which has sufficient military force to conduct a large power projection operation both at sea and ashore. An example of such a navy is the U.S. Navy with 10 Carrier950 Strike Groups, with large aircraft carriers and amphibious Expeditionary Strike Groups951 supported by U.S. Marine Corps’ three Marine Expeditionary Forces. The U.S. Navy is capable of operating as a single service, but more importantly, it is often supported by an expeditionary air and army force in joint operations, which makes it capable of conducting a large scale offensive operation both at sea and ashore. It has a comprehensive Joint Command, Control, Communication, Computers and Intelligence (C4I) system with global reach, supported by a global satellite network providing communication and intelligence information.

This definition sets the scene for a power projection force, with the participation of not only a powerful navy, but also an expeditionary air force and an expeditionary ground force, supported by a robust strategic transport capability, a command and control network with global reach, and the capability to sustain operations logistically for as long as required. It has already been established that the PLAN is likely to acquire power projection capabilities equivalent to that of a MOOTW navy. However, if the PLAAF and the PLA ground force acquire expeditionary capabilities that make

949)  This analysis is exclusively a capability assessment. Further information about Chinese missions beyond Taiwan and the debate among security intellectuals and practitioners can be found in Roy Kamphausen, David Lai and Andrew Scobell, “Beyond the Strait; PLA Missions other than Taiwan”, Strategic Studies Institute, April 2009, (http://www.strategicstudiesinstitute.army.mil/pdf/pubs/PUB910.pdf).
them able to support a blue water navy operation outside the Chinese region, then China’s power projection capabilities will grow significantly. A navy will always have limited air and ground force capabilities compared to the air force and ground force, but if the blue water navy is augmented by the air force and the ground force, then the combined capability may be multiplied by a huge factor. This chapter will seek to establish the expeditionary capabilities of the PLAAF and the PLA ground force, in order to determine whether the PLA has - or potentially will have - a real joint PP capability.

Naval Power Projection with a MOOTW Blue Water Navy

It has already been discussed in chapter 8 (PLA Navy) that the PLAN is likely to be in the process of acquiring a blue water navy with a blue water carrier task group and amphibious capabilities to land a marine brigade. Such a force is the equivalent to that of a MOOTW blue water navy, as defined in chapter 8, with a limited capability to project power ashore by the use of offensive aircraft, land attack missiles, marine amphibious forces and Special Forces. The force is capable of conducting anti-piracy operations, anti-terrorism operations, non-combatant evacuation operations (NEO), and wage small-scale wars, similar to the size of the Falklands War. To complete the MOOTW navy, it was identified in chapter 8 that the PLAN would have to augment the fleet with a variety of land attack capabilities, in order to be able to support an amphibious operation and to strike strategic and operational targets ashore. Some of these capabilities may be on their way. In chapter 10 (China’s nuclear deterrence), it was determined that the PLA has developed the DH-10 Land Attack Cruise Missile (LACM), which is the Chinese equivalent of the U.S. Tomahawk LACM. So far, the DH-10 has been developed in a ground and air-launched version, but given the PLA history of converting weapons from land to ship, it is possible that the DH-10 may also be developed into a ship- or submarine launched version. This would complement the development of a MOOTW capable blue water navy, and provide it with a land attack capability it does not have today. To complete the capabilities, it is important that the carrier fighters are able to carry out offensive operations as well. Fighter aircraft are the most versatile offensive weapon of the carrier fleet, and if the fighters do not have an offensive capability, the consequence is a severe degradation of the power projection capability of the blue water navy. We do not know whether the Chinese carrier fighters will have offensive capabilities. However, we do know that China is seeking to acquire a catapult for the carrier, which will enable the launch of a fighter loaded with heavy weapons. From this we can surmise that China has the desire to have this capability, and given the fact that this technology has been used around the world for many decades, it is likely that China will be able to build a catapult within the next decade.952

952) See chapter 8 for more information about the Chinese efforts to acquire a catapult for the aircraft carrier.
In the following, the expeditionary capabilities of the PLA ground force and PLAAF will be assessed, though we will first take a look at the strategic deployment capabilities that China has.

**Strategic Deployment Capabilities in General**

If China is to have a true PP capability, she must be capable of transporting her military forces over long distances, and must be able to support them logistically once they are committed into combat. The deployment of a military force into a war zone has three major requirements; (1) A fast strategic deployment capability for the deployment of a smaller military force to establish a presence in the theater, (2) the ability to transport a large amount of equipment, troops and logistical supplies to the theater and subsequently sustain the logistical supplies for a prolonged period of time, and (3) a deployable C4ISTAR structure capable of conducting campaign-level (War Zone) operations from a remote location, perhaps at sea, outside of China. This chapter will analyze whether China has these three major components of a strategic deployment capability.

Where a navy is able to deploy itself over the deep seas, the air force and - in particular the ground force - is dependent on the provision of strategic deployment capabilities in terms of large cargo ships, tankers and Roll-on/Roll-off (Ro-Ro) ships, which are able to transport large amounts of heavy vehicles, such as tanks and armored personnel carriers. In order to deploy rapid reaction forces, strategic air transport is required. Strategic air transport is well designed to transport forces quickly, though the capacity to transport large amounts of heavy vehicles is very limited. For this, Ro-Ro ships are much better.

**Strategic Sea Lift**

To give an impression of what is required to have a strategic sealift capacity, the following will shortly describe the capabilities of the U.S. Military Sealift Command (MSC), which is the best example of a strategic sea lift capability. The mission of the MSC is to support the U.S. deployed forces worldwide by transporting forces and delivering supplies across the world’s oceans. To sustain the permanent deployment of U.S. forces worldwide, the MSC operates 112 non-combatant, civilian crewed ships worldwide. In addition, to transport military forces in times of crisis, the MSC has the capacity to surge with a further 53 ships that are kept in reduced operating status, ready to be activated if needed. Many of the MSC ships are designed to supply the U.S. blue water navy.

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953) All data on the United States Military Sealift Command (MSC) is obtained from the homepage of the MSC, “U.S. Navy’s Military Sealift Command”, downloaded 24 June 2009, (http://www.msc.navy.mil/).
From the list of ships it has been possible to identify the following ships as being suitable for the transport of expeditionary army and air forces:

- 8 Fast sealift ships; all eight ships are able to lift nearly the equivalent of a full army mechanized division.
- 2 Heavy lift ships with a displacement of 57,290 tons.
- 6 Crane ships.
- 6 Dry cargo/ammunition ships.
- 2 Aviation Maintenance Logistics Ship to support U.S. Marine Corps aviation.
- 15 Container & Roll-on/Roll-off ships around 44,000 tons of displacement.
- 19 Large, Medium-speed Roll-on/Roll-off ships (LMSR), of which 8 are prepositioned. These 8 LMSRs can carry enough ammunition, food, water, fuel, equipment and other supplies to sustain up to 20,000 troops of an army 2x2 heavy armored brigade and the 6th Brigade afloat for up to 15 days. The remaining 11 LMSRs are in the ready forces.
- 5 Government owned tankers.
- 27 Ro-Ro ships in the ready reserve.
- 3 Modular cargo delivery system ships.

It is the experience of the U.S. that in a protracted conflict, 95% of the dry cargo and 99% of bulk petroleum\(^{954}\) is transported by sea, which shows the importance of sealift in a deployed military operation. The disadvantage of sealift is that it is slow. A sea transport with a ship sailing 20 knots over a distance of 5,000 nautical miles, from the west coast of the U.S. to Japan, takes 10 days. In addition to this, time is also spent on loading and offloading the ship. The U.S. have identified that time is a critical issue, which is why the MSC has 32 ships in the Afloat Prepositioned Force (APF), which are ships that are pre-packed with military supplies and forces, which are always within a short sailing distance to a potential military conflict area. The MSC is supporting U.S. forces deployed around the world and is also organized to support the U.S. doctrine of being able to fight two near-simultaneous major theater wars.\(^{955}\) In the context of a Chinese deployment of a military force to one out of region operation, the PLA would require less vessels than what the MSC has available. Exactly how many is difficult to assess, but a rough estimate could be around half the amount of ships, that are available to the MSC.


Strategic Airlift

Troops and a small amount of heavy goods have to arrive in theater fast, however, and for this purpose, the U.S. have the Air Mobility Command, which operates a number of strategic transport aircraft and air-to-air refueling aircraft. The military strategic transport aircraft are characterized by a wide body and the ability to carry very heavy loads over long distances. As an example, the C-5 Galaxy, which is the biggest U.S. strategic transport aircraft, can carry up to 122 tons of cargo for more than 6,000 miles, due to its air-to-air refueling capability. This enables the U.S. to deploy even heavy military units quickly over long distances. The list of U.S. strategic air transport aircraft comprises:

- 111 C-5 Galaxy
- 158 C-17 Globemaster (Air National Guard 8; Air Force Reserve 8).
- 59 KC-10 Extender Cargo and Air to Air Refueling.
- 182 KC-135 Stratotanker Air to Air Refueling.
- 206 KC-135 Stratotanker in Air National Guard.
- 65 KC-135 Stratotanker in Air Force Reserve.

In addition to the strategic air transport aircraft, the AMC operates a large number of smaller intra-theater transport aircraft. In case of an emergency where the air transport requirements exceed the capability of the AMC military aircraft, the AMC have established a Civilian Reserve Air Fleet, which consists of 990 long-range civilian passenger and cargo aircraft that are contracted to support the AMC in case of a crisis. This means that in case of an emergency, the U.S. have a total of 1,318 strategic cargo and passenger transport aircraft, including the KC-10 in the passenger role.

China’s Strategic Deployment Capabilities

The PLA currently does not have a strategic deployment capability; however, acquiring one is on the agenda in China. The PLA representatives at the 2009 National People’s Congress advocated the development of a PLA sea and air projection capability. The PLA has gone further than mere discussions. In a PLA Daily news message, it was disclosed that the General Staff Department

957) Ibid.
of the PLA has issued a directive to raise the strategic projection capability\textsuperscript{960} of the PLA, but the content of this directive is unknown. The fact that there is reference to a “strategic projection capability”, and that the PLA representatives at the National People’s Congress discussed both air and sea capabilities, suggests that China is planning to acquire both a maritime and an air transport capability. Currently, the PLA does not have a “ready-to-move” strategic transport capability like the U.S. However, China as a society does have strategic transport capabilities that are used in a commercial role every day. These assets are not available to the PLA on a daily basis, and should not be counted as a “ready-to-move” strategic deployment capability. If the PLA were to have a strategic deployment capability, ready to deploy forces on short notice, then the PLA would have to have these under control within its own organization. In case of an emergency or a surge, the PLA would be able to draw on the commercial capabilities for a shorter period of time, and this would enable the PLA to deploy and sustain its forces abroad. In the following, we will take a closer look at the Chinese civilian merchant fleet and air transport fleet, for the purpose of identifying how big the civilian strategic transport capability is.

**China’s Strategic Sealift Capability**

The PLAN development of a MOOTW blue water navy, with the capacity to deploy a marine corps brigade, will constitute a limited sealift capability. However, if larger operations are to take place, then more transport ships will have to be employed. The PLAN only has three medium sized transport ships, which are used to transport troops and supplies between the mainland and the islands in the South China Sea.\textsuperscript{961} The vessels are between 10,000-15,000 tons displacement, and are not comparable to the transport ships of the U.S. MSC, with displacements of 44,000 tons and above. This means that if the PLA were to strategically deploy military forces, it would have to rely on chartering ships from the Chinese merchant fleet. China has the world’s 3\textsuperscript{rd} largest merchant fleet with a total of 1,826 vessels.\textsuperscript{962} The ones that by category could transport military equipment and logistical supplies are:\textsuperscript{963}

\begin{itemize}
  \item Ibid. No particular criteria has been used for the selection of these ships. The fact that they have qualified to be counted on the CIA world factbook suggests that they are of a larger size and could be used to transport military forces.
\end{itemize}
With sealift capability of this size, there is no doubt that China would be able to conduct a strategic sealift of significant military forces, if required. These ships sail for civilian operators around the world, and they would not be ready on short notice. It is unknown as to whether civilian shipping companies have signed reserve contracts with the PLA.

**China’s Strategic Airlift Capability**

The PLAAF only has 14 IL-76MD large strategic transport aircraft and a large number of older small or medium sized transport aircraft.\(^{964}\) The PLAAF has recognized that its strategic transport capacity is too small, and in 2005, China signed a contract with Russia for the purchase of 34 IL-76 heavy transport aircraft and 4 IL-78 air refuelling aircraft. Due to manufacturing and contractual problems the aircraft have not been delivered yet. China is also negotiating with the Ukrainian Antonov company on the joint design of a large transport aircraft based on the AN-70 transport aircraft.\(^{965}\) It is therefore evident that China is seeking to improve its strategic transport capabilities; however, it will still take many years for them to achieve it. To compensate, China has the option of chartering civilian transport aircraft, similar to what the U.S. does. During exercise “Stride 2009” in September 2009 the PLA deployed a large number of troops\(^{966}\) by contracted Chinese civilian Boing 737 passenger and Boing 747 cargo aircraft.\(^{967}\) However, these aircraft will not be able to transport large sized and heavy equipment, such as tanks, and they can only operate out of airports, not from tactical airfields. In 2005, China had 863 civilian transport aircraft in total, and it is unclear as to how many of these

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have a long range capability.\footnote{Speech by Gao Hongfeng, Vice Minister of Civil Aviation Administration of China, 14 February 2006, (http://www.china.org.cn/e-news060214-1.htm).} China is planning to expand the fleet further, and commercial aircraft producers expect China to expand its fleet of commercial aircraft with up to 3,700 aircraft over the next 20 years.\footnote{AvBuyer, “China may need 3,700 new aircraft in the next 20 years”, 15 May 2009, (http://www.avbuyer.com.cn/e/2009/35430.html).}

The conclusion on China’s strategic deployment capabilities is that the PLA has a very limited strategic sea and airlift capability; however, there are strong indications that the PLA will acquire a strategic deployment capability. The fact that the PLA in March 2009 published discussions at the National People’s Congress about the development of a strategic projection capability suggests that a decision has been made, which is supported by an August 2009 PLA reference to a “strategic projection capability directive of the PLA.” The strategic airlift capability is likely to improve over the next 20 years, when new transport aircraft are developed together with Ukraine. The civilian air transport fleet will most likely expand significantly over the next 20 years as well, and there is potential for China to set up a civilian reserve air transport capability, similar to what the U.S. has. PLAN sealift capability is very limited; however, there is a significant merchant fleet available, should there be a requirement. Since the majority of military supplies are transported by sealift, it can therefore be concluded that China does have a strategic deployment capability. It will, however, take a long time to deploy the forces considering the limitations in the air transport capability, and the fact that the PLA does not have any prepositioned transport ships with equipment and supplies ready close to the theater.

**A Deployable Theater-level C4ISTAR capability**

To conduct a regional war outside China, the PLA will require a mobile War Zone level C4ISTAR system integrated into a mobile joint headquarter. This headquarter would require connectivity to all forces as well as connectivity back to strategic headquarters in China. It would require an all aspect intelligence capability as well as an operational and logistical planning and execution capability of military operations. As it was discussed in chapter 9, the PLA is developing a C4ISTAR system, Qu Dian, which is an automated satellite based joint battle management system, developed of the PLAFL integrated Air Defense Command and Control System.\footnote{For more information about the Qu Dian C4ISTAR system read Larry M. Wortzel, “PLA Command, Control and Targeting”, Chapter 5 in Roy Kamphausen, Andrew Scobell, “Right Sizing the People’s Liberation Army: Exploring the Contours of China’s Military”, Strategic Studies Institute, September 2007, pp. 212-220. (http://www.strategicstudiesinstitute.army.mil/).} The Qu Dian system depends on a number of imagery, meteorological, communication and navigation satellites which presently only
covers a limited area within the Chinese region (see chapter 11). If China is to have a mobile theatre level C4ISTAR system, which could be used out of region, it will have to increase its satellite coverage to the relevant region. The present static Qu Dian system relies on a large number of intelligence collectors, of which some are geographically static in the Chinese region, such as electronic intelligence collection and ground radars developing a recognized maritime and air picture.\textsuperscript{971} If the Qu Dian system was modified to a mobile C4ISTAR system, then the static sensors would have to be replaced by mobile sensors that can be deployed to the region. A War Zone headquarters with a Qu Dian system can be made mobile, but it is complicated, and it would have to conduct regular out of region exercises before it is operational. There is no indication that the PLA has a mobile theatre-level headquarters, nor does the PLAN has a vessel designed for this purpose. If it is assumed that the Qu Dian system is fully functioning and could be the core of a mobile headquarter, then this author assess that it would take 5-10 years to develop a fully functioning, well exercised, mobile war zone headquarter, capable of conducting command and control of a joint force out of region.

**PLA Ground Force Power Projection Capabilities**

An assessment of the PLA ground forces expeditionary capabilities, should include an evaluation as to the suitability of the forces for this type of mission in terms of organization, equipment, doctrine and training, and logistical capability. The Chinese government white paper on “China’s Defense in 2008” says the following about the future deployment capability of the ground force:\textsuperscript{972}

“In recent years, in line with the strategic requirements of mobile operations and three-dimensional offense and defense, the Army has been moving from regional defense to trans-regional mobility. It is gradually making its units small, modular and multi-functional in organization through appropriate downsizing and structural reform. It is accelerating the development of aviation, light mechanized and information countermeasure forces, and gives priority to the development of operational and tactical missile, ground-to-air missile and special operations forces, so as to increase its capabilities for air-ground integrated operations, long-distance maneuvers, rapid assaults and special operations.” (Emphasis added.)

The white paper specifies the deployment capability as “trans-regional mobility” and “long distance maneuvers”. Trans-regional mobility is not the same as out of region mobility, which is an indication that China is not planning on out of region operations. On the other hand, considering that the


General Staff Department of the PLA has issued a directive\textsuperscript{973} on raising the strategic projection capability of the PLA, it cannot be excluded that the PLA ground force may develop an out of region capability over time. The actual capability will be assessed in the following analysis.

**Airborne Forces**

The first to arrive in theater is likely to be the 15\textsuperscript{th} Airborne Corps, which is an elite reaction force unit, organized with three airborne infantry divisions totaling around 35,000 troops.\textsuperscript{974} As it was discussed in Chapter 6, the 15\textsuperscript{th} Airborne Corps currently has the capability to drop up to 1900 troops and twelve armored vehicles over a distance of 6,100 km. If or when Russia delivers the 34 IL-76MD that has been ordered, China will have 48 IL-76, which will be able to drop up to 7,000 troops and 36 armored IFV in the first wave, equivalent to two regiments of airborne troops. The deployment of a force of this size will mainly be for flag waving purposes or the securing of vital objects or bridgeheads, but on the larger scale will have a limited military value. What is more important is the deployment of ground force divisions and GAs, which will provide the bulk of the ground force.

**PLA Ground Force Expeditionary Capabilities**

Deploying a ground force out of region into a conflict involves significant political risk, and failure must be avoided at all costs.\textsuperscript{975} It is therefore required that the best equipped and best trained units deploy to ensure that the force has overwhelming power. If the PLA ground forces were to deploy a powerful modernized force, equivalent of the U.S. Army deployment to the 2003 war in Iraq, they would have to deploy about 230,000 troops,\textsuperscript{976} which is equivalent to 4-8 GAs of the PLA ground forces. Even with a ground force consisting of a total of 18 GAs, it is unlikely that the PLA ground force would be able to establish such a force for many years to come. Most of the 18 GAs in the PLA ground force consist of a mixture of units. In each GA there are usually one or two prioritized divisions or brigades with a higher degree of mechanization, which are supported by mobile infantry units with a lower priority in terms of equipment and mobility. This way of organizing the GA is suitable for the defense of mainland China. However, for a conflict out of region, this mixture of units with higher


and lower priority is less desirable, as it increases the risk of failure. There are two GA, which by their organization seem to be suited for an operation out of region: 977

Beijing MR, 38th Group Army
   112 Mechanized Division
   113 Mechanized Division
   6 Armored Division
   6 Artillery Brigade
   UI Air Defense Mechanized Brigade
   8 Army Aviation Regiment
   4 Engineer Regiment
   UI Anti-Chemical Regiment
   UI Communication Regiment

Shenyang MR, 39th Group Army
   115 Mechanized Infantry Division
   116 Mechanized Infantry Division
   3 Armored Division
   190 Mechanized Brigade
   UI Artillery Brigade
   UI Air Defense Brigade
   9 Army Aviation Regiment
   UI Engineer Regiment
   UI Anti-Chemical Regiment
   UI Communication Regiment

The 38th GA from Beijing MR and 39th GA from Shenyang MR are both elite units with a high mobility and mechanization. Both GA are RRU organized and trained for offensive operations. Their tank divisions are equipped with the Type 99 tanks, and both have two mechanized infantry divisions and an army aviation regiment.

Both units are involved in doctrinal development of the modular design of combat formations and are experimenting with the latest digitalized command and control systems. In terms of joint operations, the 38th GA is involved in improving the cooperation with the air force, and is

977) The information on the 38th and 39th GA is taken from chapter 6 on the PLA Army. For more information and references see chapter 6.
Chapter 13

experimenting with the inclusion of an Air Liaison Officer in its divisional and regimental command posts. With this development it is likely that this will be the first unit to experiment with close air support from fixed wing aircraft. Similarly, in an effort to integrate air and land operations, the 39th GA, Shenyang MR, has been developing doctrine for helicopter air assault operations and helicopter fire support procedures.

If we take a look at the organization of the GA, it seems as if it is well suited for an out of region operation. It is a classic organization with an armor division supported by two mechanized divisions. However, below the divisional level the Chinese are still experimenting with the modular design of their organization, which is an indication that they are not yet satisfied with how their combat organization works. Most of their training and doctrinal development seems to be directed towards optimizing their combined arms warfare capabilities, and less on the development of Integrated Joint Operations. A ground force unit deployed into an out of region theater should be fully capable of conducting joint operations, or incur a high risk of failure against a well trained opponent. Both units are equipped with some of the best equipment in the PLA ground force, though when it comes to the army aviation units, there are many unfulfilled requirements. The Chinese army aviation units are severely short of medium and heavy transport helicopters, and they do not yet have a real attack helicopter. China has developed a prototype of an attack helicopter, but it is not yet in production. When it comes to medium and heavy transport helicopters, it will take a decade, maybe more, before the units are equipped with such assets. The units are also experimenting with the new digitalized C4ISR, which is an indication that the C4ISR system is not yet developed and ready for operational use.

The 39th GA of the Shenyang MR is deployed in peacetime just north of the North Korean border, and as long as there is a probability of a crisis in North Korea, then it is highly unlikely that the 39th GA will be deployed out of region.

To achieve a minimum of 4 GA ready for deployment in an out-of-area operation, the PLA ground forces would require at least another 2-3 powerful GAs. Apart from the 38th and 39th GAs, all the other GAs mainly use motorized infantry divisions/brigades, rather than mechanized, which means less mobility and less survivability, and for this reason these GAs are not suited for out of area operation. The PLA ground force is experimenting with a modular design of its organization, which suggests that a GA could be put together using the best units from different GA. The following analysis will focus on the infantry, because there is a major difference in the combat power of a motorized versus a mechanized infantry division. The following lists the mechanized divisions and

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brigades that could be used in a modular GA:

Chengdu MR, 13th GA, 149th Mechanized Infantry Division
Lanzhou MR, 47th GA, 139th Mechanized Infantry Brigade
Beijing MR, 27th GA, 188th Mechanized Infantry Brigade
Beijing MR, 27th GA, 235th Mechanized Infantry Brigade
Jinan MR, 20th GA, 58 Mechanized Infantry Brigade
Jinan MR, 54th GA, 127 Mechanized Light Infantry Division
Nanjing MR, 1 GA, 1 Amphibious Mechanized Infantry Division
Guangzhou MR, 41 GA, 123 Mechanized Division, Amphibious
Guangzhou MR, 42 GA, 124 Amphibious Mechanized Division

When it comes to the sourcing of infantry units to modular GAs, numerically the above mechanized infantry divisions and brigades would be sufficient to form 2-3 GAs, but forming GAs in such a way is a highly theoretical exercise and not very realistic. In addition, if they were formed, they would have the same limitations as the 38th and 39th GA. The army aviation units lack helicopters, their C4ISR system is not yet developed, and they are not capable of Integrated Joint Operations. In addition, a GA organized with units from different GA’s should be trained before it is sent into combat. Based on the above it is assessed, that the PLA ground forces would not be able to assemble and deploy 4-8 modern GAs capable of informationized IJO.

PLA Ground Force Logistics

Several of the divisions and brigades train long distance deployments every year. The units deploy over thousands of miles across China on month long exercises, rehearsing the execution of the deployments, doing tactical exercises and live fire operations. Such exercises are designed not only to train the units in the aspects of a long distance deployment, but also to rehearse the logistical support system that is required for such an operation. The deployments are within China, predominantly by road or by train, limited air transport, but never by ship. This means that the deployments are designed as intra-regional exercises and not strategic deployments. Even though the exercises last a month, and the units rehearse the logistical consequences of being deployed for a prolonged period of time, the exercises still take place within China, where the local military units and local society may be offering their assistance in supporting the units.\textsuperscript{980} In a strategic

deployment some logistical support may be procured locally, but the majority of the military logistical support will come from home via ship. To logistically support a ground force in an out of region operation is an extremely big task that must be carefully planned and rehearsed to work well. If it does not work, there is a big risk that the war will be lost, as the units run out of supplies, fuel or ammunition. Even though many experts have highlighted these intra-theater deployment exercises as rehearsal for out of region operations, it is this author’s assessment that the exercises do not contain some of the most crucial elements of such an operation, namely the orchestration of out of theater logistical support. Based on an assessment of the logistical situation, it is unlikely that the ground force is ready for an out of region operation. A way to rehearse such a capability would be for the ground force to participate in exercises out of region in Asia, Africa or South America. Such an exercise would be a logistical challenge, and would generate adequate experiences for the development of an out of region logistical support system. During the Cold War, the U.S. Army carried out REFORGER (Return of Forces to Germany) exercises, where they would deploy a division from the U.S. to Germany, and the U.S. army gained much valuable experience in strategic deployment of forces.981

Based on the assessment above, it can be concluded that in accordance with the white paper on “China’s National Defense in 2008”, it is not the official policy of the PLA to develop a ground force out of region capability. A close analysis of the ground force shows that the 38th GA and 39th GA could be suitable for an out of region operation, though they are far from ready for such an operation, and it is estimated to last 10-20 years before they will have the required equipment and a mature joint warfare capability. Logistically, they are training trans-regional exercises and not out of region exercises, which means that they are not developing the logistical capability to support a ground force in combat out of region. Considering the existence of a General Staff Department directive982 on raising the strategic projection capability of the PLA, it cannot be excluded that the PLA ground force over time will develop an out of region capability.

**PLAAF Power Projection Capabilities**

Air power is a vital component of a power projection capability. First and foremost, air power is to provide air superiority over own ground and naval forces, in order to ensure that ground and naval operations can unfold unhindered from attack by enemy air power. Secondly, air power is able to strike operational and strategic targets to prepare the operational battle space and to influence

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strategic decision makers directly. Thirdly, air power can provide tactical level offensive air support to both ground and naval forces. And last, air power can contribute with important C4ISR assets to the joint C4ISTAR capability. To what level is the PLAAF able to support these tasks in an out of region operation? To answer this question the following will assess the general ability of the PLAAF to operate out of region.


“The Air Force is a strategic service of the PLA, and the main force for carrying out air operations. It is responsible for such tasks as safeguarding the country’s territorial air space and territorial sovereignty, and maintaining a stable air defense posture nationwide.”

The language of the white paper may be slightly confusing. On the one hand it says that “the Air Force is a strategic service”, which in our western military terminology can be understood as an air force which is capable of operating strategically out of region, with strategic deployments across the world and long range bombing. However, the subsequent sentence states that the PLAAF is responsible for territorial air space and territorial sovereignty, and for maintaining a stable air defense posture nationwide. This suggests that the PLAAF main theater of operation is within the Chinese region and not out of area.

The white paper goes on to say:\footnote{984}{Ibid.} 

“the Air Force has begun its transition from territorial air defense to both offensive and defensive operations. After nearly six decades of development, the Air Force has initially developed into a strategic service comprising more than one wing. It now has relatively strong capabilities to conduct air defensive and offensive operations, and certain capabilities to execute long-range precision strikes and strategic projection operations.”

In this paragraph, the PLA equates “strategic service” to the ability to “execute long-range precision strikes and strategic projection operations”. The long range precision strikes fit well with the recent development in the PLAAF training patterns, in which they are developing the capability to conduct large force employment with multiple types of aircraft supporting each other.\footnote{985}{PLA Daily, “Multiple warplanes fly to open sea”, 19 January 2009, (http://english.chinamil.com.cn/site2/news-channels/2009-01/19/content_1624743.htm).} They are also
acquiring precision weapons and long-range anti-ship\textsuperscript{986} and Land Attack Cruise Missiles.\textsuperscript{987} With only 10 H-6 tanker aircraft and only 84+ modern J-10A fighter capable of refuelling from them,\textsuperscript{988} the PLA Air Force has a severe shortage of air-to-air refuelling capability, which limits the range of its operations significantly. The key question is, from where do they expect to launch the attacks; from mainland China or from bases out of area? The white paper provides an answer to this question:\textsuperscript{989}

“To raise its integrated support capabilities, the Air Force attaches importance to the development of logistical and equipment support systems. It endeavors to improve the support facilities of airfields and positions; strengthen its logistical forces for rapid construction of air defense projects, bomb elimination at and rapid repair of airfields which have suffered attack, and aviation medical support; develop and deploy the second generation of specialized logistical equipment; create a storage and supply network for special-purpose materials; and build step by step bases capable of supporting multiple types of aircraft.”

What this means, is that the PLA Air Force is preparing to fight from its home bases. They are improving their logistical capabilities to provide cross-service to all types of aircraft on all bases, and they are establishing a rapid runway repair capability, which can reduce the damage from enemy air attacks. This statement of intentions in the white paper is supported by the information that is obtainable about the PLA Air Force activities, and it also makes sense. The PLA have been preparing for a Taiwan operation. They are expecting air and cruise missile attacks on their air bases, and they are preparing for this. In comparison, during the Cold War NATO made similar cross service agreements for the refueling and rearming of fighters on different air bases,\textsuperscript{990} and NATO also established a rapid runway repair capability.\textsuperscript{991} The PLA Air Force is doing exactly the same, which suggests that they are expecting to fight from their home bases and not out of region. However, the capabilities that are developed for this can over time also be used for out of region operations. In its efforts to improve its air base redundancy, the PLA Air Force has been developing the capability to use civilian airfields and even highways as runways.\textsuperscript{992} To do this, the PLA Air Force will have developed a mobile aircraft turnaround

capability, which over time could form the core of an out of region deployment capability. In terms of aircraft servicing and rearming, a mobile highway aircraft servicing capability is essentially similar to what is required for an out of area operation, except that substantially more is required when it comes to logistical support of the detachment.

If the PLAAF was to establish an out of region capability, what would they have to do and how long would it take? To answer this question, we must take a look at the organization, equipment and logistics as well as doctrine and training of the PLAAF.

The PLAAF combat organization within an MR is made up of Air Divisions, each consisting of three regiments. Each regiment flies a single type of aircraft, whether it is fighters, bombers, Airborne Early Warning (AEW), Signal Intelligence (SIGINT) aircraft or transport aircraft. However, the PLAAF does not have enough aircraft of each type to make each capability available in all MRs.

The PLAAF is currently developing a new tactical doctrine using large force employment techniques similar to western air power tactics, where a formation of aircraft consisting of air defense fighters, offensive fighters and bomber aircraft, suppression of enemy air defense (SEAD), supported by tankers, AEW and SIGINT aircraft fly in a coordinated self-supportive mission. If the PLAAF were to deploy out of region and use these tactics, they would have to bring a number of each type of aircraft, and for each mission they would have to develop a detailed and coordinated plan. This is what the U.S. Air Force is doing, and they have adjusted the expeditionary part of their organization so that it matches their tactical doctrine. They have established 10 Aerospace Expeditionary Forces (AEF), each containing a number of fighters, bombers, SEAD aircraft, AEW, tankers and combat search and rescue (CSAR) helicopters. Such a force is self-sustained and can operate independently. The PLAAF does not have such a concept for expeditionary operations, and is not organizationally structured to conduct expeditionary operations, but is organized for combat at home.

There is still a considerable technological gap between PLAAF aircraft and most western aircraft. The PLAAF is improving its technology level; however, there is still some way to go. China is currently starting to use satellite navigation technologies in her aircraft and to guide the weapons. The Chinese experimental satellite navigation system, Beidou 1, is available in the Chinese region now, providing coordinates and accuracy of 20 m. It is not available outside the region. In 2015, the system is planned to be replaced by Compass (Beidou 2), which will provide global coverage using up

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to 30 orbiting satellites. This means that the satellite receivers of PLAAF aircraft and weapons could be able to receive satellite navigation signals globally by 2015.

When flying abroad, logistical and technical interoperability is a major issue. If the aircraft cannot get power or fuel because the plugs or fuel hoses do not fit the aircraft system, then it can be very difficult to operate abroad. The PLAAF have very little experience in flying abroad, which means that the issue of interoperability with other air forces has not been tested. PLAAF aircraft of Russian manufacture are most likely interoperable with Russian equipment, and it is possible that the indigenous Chinese aircraft have the same standards. However, it still remains to be tested, as the aircraft are not flying abroad.

When it comes to tactical level doctrine, the PLAAF is developing what may become an efficient and powerful tactical level combat doctrine, which in the future might potentially be used in an expeditionary operation. However, the PLAAF is currently developing its air power doctrine independently, and they are not cooperating with any other state’s air force. Also, the PLAAF does not participate in exercises abroad, which means that it is unlikely that the PLAAF doctrinally is interoperable with any other air force. Apart from a few transport pilots, most pilots only fly in China, and it is therefore likely that all tactical communication on the radio takes place in Chinese, which makes it almost impossible to train with other nations. In addition, if the pilots do not master civilian international air traffic control terminology and radio procedures in English, then flying abroad in the international airspace structure will be very difficult.

Logistically, the PLAAF would have to develop a mobile aircraft servicing capability, which could be developed based upon its mobile highway aircraft servicing capability. In addition, all other functions of an airbase would have to be deployable, including the air regimental operations center with a global reaching C4I capability, air traffic control, fire- and rescue services, aircraft and vehicle fueling services, base security, logistical supplies, and administration. Such a capability would take many years to develop and would have to be trained several times before used operationally, preferably abroad.

The conclusion from all of the above is that the PLAAF is designed to fly from mainland China. They train at home, the tactical language is Chinese, they do not have an expeditionary organization, they are not able to cooperate with other air forces doctrinally, and it is questionable whether they are technically interoperable with other air forces abroad. Based on this, it can be concluded that the PLAAF will not be able to operate in an expeditionary fashion for at least 10-15 years. That is how long this author assesses it will take to transform the whole air force to out of region operations, provided it is decided that this is to be the task. From what can be seen in the public space of the PLAAF activities, there are no signs yet that such a decision has been made. If we are to look for signs of a change of behavior that would indicate the establishment of a PLAAF out of region capability, then look for PLAAF fighter participation in exercises abroad and fighter pilots learning English, which is the language used in international air traffic control procedures. Also, the establishment and training of a deployable air base capability is an important indicator of
expeditionary intentions. These would be important indicators that a decision had been made in terms of being able to operate abroad. What is even more important, is that China will not be able to conduct a joint out of region power projection operation without the participation of the PLAAF, because only the PLAAF will be able to provide combat aircraft enough to achieve and maintain air superiority over a combat zone, which is required in modern warfare. Aircraft carriers do not have enough combat aircraft to do this on their own.

**Summary on China’s Power Projection Capabilities**

There are strong indications from the top level of the PLA that the PLA will acquire a strategic projection capability, which will involve both air and sea capabilities. This naturally suggests that both the PLA ground force and the PLAAF over time will develop expeditionary capabilities, as they are the natural components of a strategic projection capability. Information suggests that the PLAN is preparing to establish a MOOTW capable blue water navy, which is capable of projecting limited power ashore. It will probably be able to conduct anti-piracy operations, anti-terrorism operations, non-combatant evacuation operations (NEO), and wage smaller wars, similar to the size of the Falklands War. Neither the PLA ground force nor the PLAAF currently seems to be organized, equipped or trained - or even to be preparing - for expeditionary operations out of region. The official policy disclosed in the white paper on China’s National Defense in 2008,\(^{997}\) indicates that the PLA ground force and the PLAAF are to operate within the Chinese region, and currently there are no indications that they are preparing for out of region operations. If the Chinese government were to decide that the PLA ground force and the PLAAF must establish an expeditionary capability, then it would take at least 15 – 20 years before such a capability would be fully established. During this time, the units would have to be reorganized, issued more and new equipment, and train for operating jointly in a competent manner. Importantly, they would also have to start exercising abroad and gain experience of how to deploy with ship and aircraft, and of how to sustain a large military force logistically abroad. The PLAN does not have an organic sealift capability, but China does have a merchant navy which could support such a deployment. It will still take another 10-20 year before China has established a strategic airlift capability. Finally, there are no indications that the PLA has a deployable theater-level C4ISTAR capability capable of commanding joint operations out of region. If the PLA were to acquire one, it would probably take 5-10 years to develop it and in addition China would have to acquire a substantial satellite capability (imaging, meteorological, communication and navigation) over the relevant area of operation.

Conclusion

In 1934, the Red Army of the CPC was on the retreat from the Kuomintang Army, and went on what has since then become known as the “The Long March”. By going on The Long March, the Red Army avoided decisive battles, and was able to recuperate, reorganize and return in strength to defeat the Kuomintang. The Long March also marked the commencement of the ascent to power of Mao Zedong. I believe we are experiencing a parallel situation in modern times. Since the mid-1980’s, there has been no existential threat to China, and China will have a continuous period of 50 years with the absence of war, where the PLA can reorganize and modernize unhindered. This prolonged period of modernization can be viewed as the second long march of the Chinese People’s Liberation Army. When the march is over in the middle of the 21st century, the PLA may become one of the most powerful militaries in the world, and will play a key role in the ascendance to power of China.

The Chinese military is in the process of changing its paradigm from being a continental power with a people focused infantry force, to becoming both a continental and a maritime power with a technologically advanced joint maneuver force. From exclusively being focused on the defense of her territory, she will in the future also establish a maritime capability to safeguard her national interests abroad. The transformation process of the Chinese military started in the early 1980’s, and the PLA is planned to achieve its goal of being able to win an informationized war by the mid-21st century. China has a vision for what her military capabilities should be 40 years from now, and she has the political will to both finance it and to utilize her comprehensive national power to achieve this strategic goal. The goal is clearly strategic, since it will position China amongst the greatest powers of the modern world, and China will acquire the political influence that follows from being both a great military and economic power.

The PLA and the CPC are on this journey together, and even though the nature of the relationship between the PLA and the Chinese political leadership seems to be moving away from a “brother in arms” relationship to a more professional relationship, they nevertheless have clearly understood common objectives. They agree that the CPC must stay in power, and the PLA is the main instrument to ensure just that. They also agree that strengthening the PLA is crucial to the rise of China, and the

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CPC is more than willing to finance the modernization of the PLA. This symbiotic, mutually beneficial interdependent relationship is set to continue.

The modernization covers all aspects of the PLA, and not one important part of the PLA is left unchanged. It covers ground forces, air forces, the navy, nuclear forces, space, the military industry, doctrine, and organization. The PLA ground force is changing into a mechanized, modular maneuver force, capable of conducting joint offensive operations. The ground force still has to invest enormous sums in acquiring modern informationized equipment, and especially in the acquisition of a transport and attack helicopter force, which will take many years. Even though the ground force is training trans-regional deployments, there are currently no signs that the ground force is establishing an out of region capability.

The modernization of the PLAAF has a high priority in China. Hu Jintao has urged the PLAAF “to build a powerful air force to meet the demands of the PLA for missions of the 21st century”\(^{999}\) and for the PLAAF “to develop systematic capabilities for both offensive and defensive operations”.\(^{1000}\) The PLAAF has achieved impressive results in terms of technological improvements over the last two decades. The technological level of the indigenous developed aircraft is still behind the West, and until the Chinese aerospace industry is able to develop technology which is on par with the West, the PLAAF will inevitably lag behind. The PLAAF is limited on some of the key force multipliers, such as AWACS, SIGINT aircraft, EW aircraft, though they are in the process of developing these capabilities. The PLAAF is changing its concept of operations from being a territorial air defense force to being a modern air force, capable of conducting offensive and defensive operations and long range attack missions. The PLAAF is changing its doctrine from total centralized control of both planning and execution, to adopting the Western concept of centralized planning and decentralized execution. It is a concept that has proven to be very successful in the West. The PLAAF exclusively operates from Chinese air bases. Its pilots have no or very limited experience in flying abroad, and there are no signs that the PLAAF is planning to operate out of region.

With the PLAN, however, it is a different story. The modernization of the PLAN is of strategic importance to China. Hu Jintao has told the PLAN to “comprehensively push forward its modernization to constantly enhance its capability to carry outs its mission in the new century and new phase”.\(^{1001}\) China is in the process of establishing a blue water navy with the capability to protect her sea lines of communication with carrier groups and is possibly also acquiring a limited capability to project power

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ashore from the sea with a brigade sized amphibious force embarked on blue water capable vessels. If China were to have a true power projection capability similar to the U.S., she would need to develop expeditionary capabilities with the PLA ground force and the PLAAF, and this study has shown that China is far from such a capability, but it may be on its way.

If China’s ASBM system becomes operational, it may have significant strategic consequences for deterrence, arms control and the balance of power in the western Pacific region.

Two of the most crucial parts of the PLA modernization are the informationization process and the implementation of an Integrated Joint Doctrine. The Informationization process is a PLA wide implementation of a digitalized joint C4ISR network, which over time will provide the PLA with a joint network enabled capability, which together with the joint doctrine will constitute a change of paradigm for the PLA. The implementation of the Integrated Joint Doctrine is a very ambitious project, which is likely to take time, as it requires a change of mindset of the PLA operational commanders. As the U.S. experiences with implementation of joint doctrine have shown, such a transformation will meet with resistance from reluctant officers and service rivalry, and the PLA is likely to experience similar problems. Nevertheless, as the PLA has a top-down implementation strategy, it is likely to achieve this goal over a couple of decades.

The PLA run Space Program is a crucial part of the informationization process. The PLA is developing a theatre-level C4ISTAR network, which will provide theatre wide communication from top level strategic communication down to the lowest tactical units. At the tactical level, units and individual soldiers will be able to receive digital pictures displaying an identified battle space, as well as video from the UAV above.

Chinese communication and earth observation satellites currently cover the Chinese region and the neighboring areas, and China already has a global but thin coverage of image military satellites. The PLA is in the process of acquiring more satellites and the development of smaller satellites and more powerful launch vehicles suggest that a better satellite coverage is on its way. The Compass satellite navigation system will by 2015 have up to 30 orbiting satellites and provide a global coverage, which will be essential for the PLAN blue water navy. China advocates a peaceful use of space, but the downing of a weather satellite with a ballistic missile in 2007 is evidence of a desire to possess ASAT weapons, and the maneuvering of the microsatellite during the SH-7 mission suggests that China already has a space weapon development program. This is a great concern, and there is great potential for an international arms race in space being set in motion.

China has aspirations of being a military power equal to other great military powers of the world, but this is not likely to happen until its weapons industry has closed the technology gap to the West. The Chinese industry has to a large extent relied on copying and modifying weapon systems they have acquired from abroad, mostly from Russia. Russia has denied China purchasing its most sophisticated weapons, which, combined with the Western arms embargo of the Chinese weapons industry, has made it difficult for China to close the technology gap. China is aware of this, and if it is to catch
up with the West, then it has to develop its own R&D capability, which China is in fact now investing heavily in. In addition, China has changed strategy for the development of its arms industry. Most of the Chinese military industry is developing both military and civilian technology. Due to the arms embargo, a Western company may be prevented from selling to or cooperating with the military company of a Chinese conglomerate, however there are much fewer restrictions on cooperation with the same conglomerate’s civilian companies. By entering contracts on civilian cooperation, Chinese companies obtain knowledge of plant management and quality assurance, and they acquire sophisticated machinery for the manufacturing process. It is very likely that these improvements also will be of use to the military companies of the Chinese conglomerate. Because of this strategy, it is likely that we will see improvements in the quality and the capabilities of the Chinese weapons in the future.

The Chinese leadership is openly contemplating the establishment of a strategic projection capability, and the fact that the PLA has issued a directive on its development, suggests that it is already on its way. The strategic projection capability is to encompass both a sea and an air projection capability, which will enable China to deploy large military forces across the world. China already has a significant merchant fleet, which could be used for this purpose, but since these ships are used for commercial purposes, it will take time to gather them for a particular operation. If the PLA is to have a readily available maritime strategic projection capability, then it should optimally be under control of the PLA and be ready for deployment on short notice. If such a capability is to be based on newly built ships, then it may take up to 10 to 20 years before this capability is ready. When it comes to strategic air transport, then there are also long lead times before the PLA can have such a capability. The optimal solution for the PLA is to solve the contractual issues with Russia on the delivery of the 34 IL-76 transport aircraft, and in this way acquire a limited strategic air transport capability within a fairly short period of time. However, the majority of strategic air transport aircraft will probably come from the Sino-Ukrainian strategic transport aircraft project, and it will take many years before this project starts to deliver aircraft. If China has decided to acquire a strategic deployment capability, then it is obvious that the PLA will have to prepare its military forces for expeditionary operations as well. Otherwise, there is no reason to have a strategic deployment capability. There are currently no signs that either the PLA ground force or the PLAAF are preparing expeditionary capabilities, but with a lead time of 10 to 20 years, then it is possibly still too early to see the changes. In the next 10 to 20 years, both the PLA ground force and the PLAAF will carry on with their ongoing doctrinal and technological modernization processes, and if they are to become expeditionary and operate abroad, then it is likely that they will go through an organizational change that will design the forces for this purpose. Thereafter, both the PLA ground force and the PLAAF will undergo significant preparations and start exercising abroad, which will be the most evident sign that the PLA is on its way to establish an expeditionary power projection capability.

China’s nuclear deterrence relies on a “credible minimum deterrence” capability, and China has never armed herself with thousands of nuclear weapons like the U.S. and the Soviet Union did during
the Cold War. However, the credibility of the Chinese defense concept may become undermined by the U.S. ballistic missile defense program, which is not especially being developed to counter the Chinese nuclear weapons, but rather against the launch of nuclear missiles from states like Iran and North Korea. As a result, China may decide to improve her nuclear capabilities to maintain a credible deterrence. We may also see that China will embark on her own missile defense program or even abandon her NFU pledge. If these things were to happen, then there is potential for the very unfortunate resurgence of a nuclear arms race.

China’s military capabilities have improved significantly over the course of the past two decades, and the modernization process is set to continue. It is natural that neighboring states and other powers with interests in the region will be concerned about where this may potentially lead. Some will say that power politics is a zero sum game, and that when China improves her power, others will lose. In my opinion that is only true if China uses her future power for causes other than defense of her territory, anti-piracy operations, UN peacekeeping operations or disaster relief. This is where Chinas’ deliberate lack of transparency in her defense policy is a problem. It is not known how big and how powerful the Chinese military is going to be, or indeed; what it will be used for and where. China’s significant economic growth, and the fact that China is the most populous nation in the world, means that China has the potential to become a superpower with military capabilities far exceeding any other state in the world. This will affect the global military balance. It may take many decades to develop such a powerful capability, but nevertheless, China does have the potential, and it is a concern to other states. Lack of transparency inevitably leads to uncertainty and ferments mistrust and fear. If China chooses to continue along this trajectory of secrecy and unpredictability, other states that feel intimidated may conclude that they have no choice but to improve their military capabilities and hedge their security by entering into security alliances. If China desires to avoid destabilizing the security balance, then she must be more transparent in her defense policies, and her pledges of a peaceful rise must be seen as trustworthy by other states. This book has shown that there are five aspects of the current Chinese military modernization which will have a major strategic impact, not only in the region but globally, and therefore deserve to be highlighted.

- The significant modernization program of the PLA and steady increases in the Chinese defense spending, combined with lack of transparency, will be a serious cause of concern internationally, and we have already seen Japan, Australia and India raise their defense budgets.

- The development of a Chinese blue water navy will be the first step in China’s development of an out of region power projection capability. Lack of transparency will prevent other states from knowing China’s aspirations for a future power projection capability, which will be a serious cause for concern for states around the world.

- The successful development of a Chinese ASBM system may affect the U.S. Navy ability to support allied countries in the western Pacific and as such change the balance of power in the region and un-
dermine the U.S. role as a security guarantor. With China’s plans for a global satellite coverage, there is potential for extending the range of the ASBM system to other regions or fitting missiles on maritime vessels and submarines and make the system global.

- An arms race in space is already under way, and involves as a minimum China and the U.S., but Russia and India are also investing heavily in space technology. China’s development of ASAT capabilities as well as the ASBM system, which is very dependent on space assets, is likely to accelerate the militarization of space.

- The U.S. development of a ballistic missile defense will undermine the credibility of the Chinese “minimum deterrence” capability. Hence, China is likely to improve her nuclear capabilities in the future or renege on her NFU pledge.

If these issues are not dealt with and defused in a constructive manner, not only by China but also by the U.S., India, Japan, Russia and other great powers, then they may escalate into a global arms race with the creation of a multi-polar world full of mistrust.
Selected Bibliography

Bibliography


Erickson, Andrew S. and Andrew R. Wilson, “China’s Aircraft Carrier Dilemma”, Naval War College Review, Volume 59, No. 4, Autumn 2006.

Erickson, Andrew S. & Lyle J. Goldstein, “China’s future nuclear submarine force; Insight from Chinese writings”, Naval War College Review, Winter 2007, Vol. 60, No. 1,


Ferguson, Joseph, “The Diaoyutai-Senkaku Islands Dispute Reawakened”, 4 February 2004, China Brief, Volume 4, Issue 3,


Kamphausen, Roy and Andrew Scobell, “Right sizing the People’s Liberation Army: Exploring the contours of China’s Military”, Strategic Studies Institute, September 2007, p.338.

Kamphausen, Roy, Andrew Scobell and Travis Tanner, “The People in the PLA: Recruitment, Training and Education in China’s Military”, Strategic Studies Institute, September 2008.

Ka Po Ng, Interpreting China’s Military Power, Doctrine makes readiness”, Frank Cass, 2005.


Osborne, Milton, “River at Risk; The Mekong and the Water Politics of China and Southeast Asia”, Lowy Institute for International Policy, 2004,


Pehrson, Christopher J., “String of Pearl; Meeting the challenge of China’s rising power across the Asian littoral”, Strategic Studies Institute, July 2006.


Ryan, Mark A., David M. Finkelstein & Michael A. McDevitt, ”Chinese War Fighting, the PLA Experience Since 1949”, An East Gate Book, 2003,


Tai Ming Cheung, “Fortifying China; The Struggle to Build a Modern Defense Economy”, Cornell, 2009.


Yan, Xuetong, “Analysis of China’s National Interests”, February 2006. An important book published on the internet for observers of Chinese politics. Not only did the book receive awards and prizes in China, it is now being used as a textbook in several institutions such as the National Defense University. (http://rwxy.tsinghua.edu.cn/xi-suo/institute/english/production/yxt/interests%20analysis.htm).

**Chinese Government**

PLA Daily. The official PLA information website in English. The site only publishes information approved by the Chinese government. (http://english.chinamil.com.cn/).


**Republic of China**

Selected Bibliography

**UK Government**

**U.S. Government**


**United Nations**


**Newspapers**


China View. A Chinese web based news agency, which provides government approved information, (http://www.xinhuanet.com/english/).


Japan Times Online, independent Japanese online newspaper, (http://www.japantimes.co.jp).


Philstar, Philippine news agency (http://philstar.com).

RIA Novosti, Russian online news and information agency. In the context of this report RIA Novosti news has mainly been updates on Sino-Russian military cooperation, arms trade and Russian military events and weapons development. RIA Novosti has access to Russian government and Russian business sources and is therefore considered a valuable source of information. (http://www.en.rian.ru).

Reuters news agency (http://www.reuters.com)

Times Online, British newspaper, (http://timesonline.co.uk).

Washington Post, American newspaper, (http://www.washingtonpost.com)

WorldTribune.com. An independent American internet news site focusing exclusively on international news. WorldTribune.com recommends other websites such as East-Asia-Intel, which is very critical of the Chinese government. Only factual information has been used from WorldTribune.com. (http://www.worldtribune.com).

**Websites**

Airforce-Technology.com. An informational website for mainly designed for the U.S. and western defense industry. Mainly factual information has been obtained from this source. (http://www.airforce-technology.com/).

Air Power Australia. Independent Australian think tank specialized in research of air power and broader military research. The website has been trying to influence the Australian and United States defense policies, especially on the F-22 development program. This has been less the case in the context of the websites dealings with the Chinese military. (http://www.ausairpower.net).

Asia Times Online, a free uncensored Asian website that reports on and examine geopolitical, political, economic and business issues from an Asian perspective in English. The opinions given are those of the author and not necessarily the opinion of the Asia Times Online. Mostly the reports are well researched and of good quality. (http://www.atimes.com).

AvBuyer, a Chinese aviation web portal and a news and information source on the Chinese aviation industry. The site is mainly focused on the Chinese commercial aviation industry. (http://www.avbuyer.com.cn/en/news/).

China Brief. The Jamestown Foundation whose mission it is to inform and educate policy makers and broader policy communities about events and trends in those societies which are strategically or tactically important to the United States. Utilizing indigenous and primary sources. Some authors used by China Brief have a political or human rights issue with the Chinese government and can be
critical of China. Mainly factual information has been used from this source. (http://www.jamestown.org/programs/chinabrief/).


East-Asia-Intel. A website specialized in bringing geostrategic and military news from East Asia, especially China, Japan and the Korean peninsula. East-Asia-Intel is very critical of China’s regime and tends to portrait China as a future threat. It is mainly factual information that has been used from East-Asia-Intel. (http://east-asia-intel.com/).


GlobalSecurity.org, a U.S. internet based organization providing security information. The source is mostly used to acquire factual information. (globalsecurity.org).

Jane’s Sentinel Security Assessment, one of the most reliable sources of information on military forces. In most cases the information on Jane’s has been checked with other sources to verify reliability, (www.janes.com).

Naval-Technology.com. An informational website for mainly designed for the U.S. and western defense industry. Mainly factual information has been obtained from this source. (http://www.naval-technology.com/).

The Nuclear Threat Initiative (NTI), “China and Chemical and Biological (CBW) Nonproliferation”, (http://www.nti.org/db/china/cbwpos.htm). The NTI is a non-profit organization with a mission to strengthen global security by reducing the risk and preventing the spread of nuclear, biological and chemical weapons.

RAND Corporation. A non-profit U.S. research institution that, among other issues, addresses global security issues. The think tank is considered to provide research of high quality. (http://www.rand.org).

Rigzone.com, a web-based news agency for the oil industry specializing in the exploration and drilling industry. The website is considered a reliable source of information.

Sinodefence.com, an independent UK based website specialized in information about the Chinese military forces. (http://www.sinodefence.com).

Sukhoi. Russian aircraft manufacturer. Website used to obtain information about Russian aircraft. (http://www.sukhoi.org/eng/).

UPI.com (http://www.upi.com), a venue for the furtherance of public conversation. Opinions expressed by authors belong to the authors alone and UPI does necessarily agree.
The Return of China – The Long March to Power: The New Historic Mission of the People’s Liberation Army is part of a broader research programme on China. It is conducted by China Studies located at the Institute for Strategy, Royal Danish Defence College. The aim of the project is to investigate how China’s growing economic and military power will lead to a new security and defense balance in the Asia-Pacific region and globally, among these being to explain the consequences for China’s neighbours and the sole superpower, the US.

The research programme consists of five main topics:

- China’s role as an economic superpower
- China as a military power
- China’s relationship with the US
- China’s role as a global actor
- China’s role as a regional actor

In the light of the research programme it will be described how the West can best develop a policy that makes room for a rising China within the framework of a changed international system.