

## 6. IMPLEMENTING PLA SECOND ARTILLERY DOCTRINAL REFORMS

*By Kenneth Allen and Maryanne Kivlehan-Wise<sup>332</sup>*

*Second Artillery conventional missile campaign operations are restricted by many factors...only by combining combat factors such as personnel, equipment, launch sites, combat command, and various safeguarding into an organic whole can we form an overall combat capability.*

*Zhanyixue [The science of campaigns; 战役学]<sup>333</sup>*

### INTRODUCTION

Within recent years a great deal of attention has been given to studying the modernization of China's People's Liberation Army (PLA) in general, and the modernization of China's missile force, the Second Artillery Corps, in particular.<sup>334</sup> Although there is disagreement on the pace at which Second Artillery is pursuing its program of reform and the operational significance of the accomplishments they have made thus far, the basic direction of the modernization program is fairly well understood. There seems to be a general consensus that the PLA is moving.<sup>335</sup>

- Toward increasing the overall number of missiles in its arsenal.
- Away from liquid-fueled missiles and toward the use of solid fuel.
- Away from fixed-site launchers and toward the use of mobile launchers.

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<sup>333</sup> Wang Houqing, Zhang Xingye, ed., *Zhanyixue* [The science of campaigns], Beijing: National Defense University Press, May 2000, Chapter 14, 376.

<sup>334</sup> For purposes of this paper, the Second Artillery Corps (*dier paobing*; 第二炮兵) will be identified simply as Second Artillery (*erpao*; 二炮). There is no accepted English acronym such as PLAAF for the PLA Air Force or PLAN for the PLA Navy.

<sup>335</sup> For a discussion of PLA strategic and conventional missile modernization see the July 2002 DoD *Annual Report on the Military Power of the People's Republic of China*. (The transporter erector launchers (TELs) for DF-11/CSS-7/M-11 and DF-15/CSS-6/M-9 SRBMs can be re-loaded within 45 minutes. The missiles can be served by a crew of fewer than 10. USNI Military Database ([www.periscope.ucg.com/weapons/missrock/landatk/w0000606.htm](http://www.periscope.ucg.com/weapons/missrock/landatk/w0000606.htm)).

- Away from single-use launchers and toward the use of re-loadable launchers.
- Away from a purely nuclear missile force and toward a mixed nuclear and conventional force.
- Toward building a reliable short-range ballistic missile force capable of being used in local wars.

When examining the evolution of this independent branch of the PLA, much of the discussion has focused on two specific issues: strategic level nuclear doctrine and the ballistic missile order of battle. As others point out, these issues are important and logical starting points for understanding Second Artillery's modernization because they help in identifying their aspirations and the general direction of reform. Several authors, including Iain Johnston, Bates Gill, James Mulvenon, John Lewis, Hua Di, Stan Morris, Brad Roberts, Shirley Kan, and Mark Stokes, have written extensively on these issues.<sup>336</sup> At the same time, however, regardless of its doctrine, weapons acquisition alone cannot tell the complete story of the Second Artillery's capabilities. To more fully understand this process and gauge the PLA's progress toward modernization, one needs to pay attention to institutional and software issues—what Finkelstein refers to in the introductory chapter as the third pillar of PLA reform.<sup>337</sup>

This paper focuses on the understudied institutional aspects of Second Artillery that will either enable or hinder the implementation of PLA operational doctrine. Where possible, this paper also examines the reforms currently taking place within Second Artillery and the challenges to transformation that this branch of the PLA is facing on its journey toward modernization. The term “institutional reforms” as used in this paper is

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<sup>336</sup> Bates Gill and James Mulvenon, “The Chinese Strategic Rocket Forces: Transition to a Credible Deterrence,” *China and Weapons of Mass Destruction: Implications for the United States*, National Intelligence Council, Conference Report, 5 November 1999; Alastair Iain Johnston, “Prospects for Chinese Nuclear Force Modernization: Limited Deterrence Versus Multilateral Arms Control,” *China Quarterly*, June 1996; John Wilson Lewis and Hua Di, “China's Ballistic Missile Programs: Technologies, Strategies, Goals,” *International Security*, Vol. 17, No. 2, Fall 1992; Alastair Iain Johnston, “China's New 'Old Thinking': The Concept of Limited Deterrence,” *International Security*, Winter 1995/96, Vol 20, No 3; Mark Stokes, “Weapons of Precise Destruction: PLA Space and Theater Missile Development,” *China and Weapons of Mass Destruction: Implications for the United States*, Conference Report, 5 November 1999; Mark Stokes, “Chinese Ballistic Missile Forces in the Age of Global Missile Defense: Challenges and Responses,” in *China's Growing Military Power: Perspectives on Security, Ballistic Missiles, and Conventional Capabilities*, eds., Andrew Scobell and Larry M. Wortzel, Carlisle, PA: Strategic Studies Institute, September 2002, p. 107-168; Mark Stokes, “The People's Liberation Army and China's Space and Missile Development,” paper presented at the Conference on The People's Liberation Army at 75: Lessons Learned,” 14-15 September 2002, U.S. Army War College, Carlisle Barracks, PA; Robert S. Norris, Andrew S. Burrows, and Richard W. Fieldhouse, *Nuclear Weapons Databook, Volume V: British, French, and Chinese Nuclear Weapons*, 1994; Shirley A. Kan, *China: Ballistic and Cruise Missiles*, Washington, DC: Congressional Research Service, 10 August 2000.

<sup>337</sup> See Chapter One of this volume.

meant to capture a wide range of organizational reforms, management reforms, and systemic reforms—often referred to as “software” issues—that the PLA will need to implement in order to fight with its new operational concepts, employ and maintain new weapons and technologies, and fill its ranks with a new breed of officers. In short, it refers to the people, processes, and institutions that will either enable or limit the PLA’s capability to fight and win Local Wars Under Modern High-Tech Conditions.<sup>338</sup>

This paper consists of several sections. It begins discussing Second Artillery’s doctrine by examining its basic missions, the types of campaigns assigned to Second Artillery, and the requirements needed to prosecute these campaigns as described in *Zhanyixue*. It looks at the historic development of Chinese missile doctrine and points to a shift in focus away from a purely nuclear missile force and toward a mixed nuclear and conventional missile force. It then takes a detailed look at Second Artillery’s organizational structure, examining the extent to which this structure supports and limits the implementation of modernization reforms. Finally, it shifts focus again to examine Second Artillery’s personnel, education, and training policies and programs currently in place to support the PLA’s move from a labor intensive to an expertise intensive force. Four appendices are provided with detailed reference material on Second Artillery’s history, organizational structure, leadership, and foreign relations.

## **SECOND ARTILLERY CAMPAIGN DOCTRINE**

The evolution of Second Artillery and its campaign doctrine is firmly rooted in the PRC’s desire to develop nuclear weapons capabilities (See Appendix A for a brief history). It remained an all nuclear force until the early 1990s and it is only within the last decade that the PLA has given the development of conventional missile doctrine any serious attention.

### **Current Campaign Theory**

As will be discussed below, the authors recognize that nuclear and conventional campaigns have many similar requirements. Both types of campaigns are highly complex in terms of technology and organization. For this reason, fully formulated operational concepts, a high level of coordination, a central unified command, a comprehensible organizational structure, and thorough peacetime planning and preparation are basic requirements of any Second Artillery campaign.

According to *Zhanyixue*, the basic missions of a Second Artillery campaign are: (1) to conduct nuclear retaliation campaigns using strategic nuclear missiles to attack key enemy strategic targets and achieve strategic goals, (2) to conduct conventional missile attack campaigns, using conventional missiles to attack key enemy strategic and campaign targets in order to achieve the planned campaign goals, (3) to help the combat operations of the army, air force, and navy campaign *juntuan*, or (4) to accomplish other

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<sup>338</sup> For a more detailed discussion of Institutional Reforms throughout the PLA, see *Institutional Reforms of the Chinese People’s Liberation Army, Overview and Challenges*, by Kenneth Allen, Dean Cheng, David Finkelstein, and Maryanne Kivlehan, Alexandria, VA: The CNA Corporation, 2002.

combat missions assigned by a higher authority.<sup>339</sup> These missions can be accomplished in one of two types of campaigns:

- Nuclear retaliation campaigns (*he fanji zhanyi*; 核反击战役)
- Conventional missile attack campaigns (*changgui daodan tuji zhanyi*; 常规导弹突击战役)

## NUCLEAR RETALIATION CAMPAIGNS

As defined in *Zhanyixue*, a nuclear retaliation campaign can be either an independent campaign or part of a combined nuclear retaliation campaign.<sup>340</sup> The objective is to launch a nuclear attack on key enemy targets. The desired effect of this campaign is to paralyze the enemy command system, weaken the enemy's capability to prosecute a war, sabotage the enemy's strategic plans, shake the enemy's will to fight, and stop the escalation of nuclear war.<sup>341</sup>

Some of the basic operations *Zhanyixue* attributes to this type of campaign include: (1) to conduct "counter-nuclear deterrence combat" (*fan he weishe*; 反核威慑) by displaying nuclear power and will in order to deter the enemy's nuclear deterrence in support of the national political and diplomatic struggle,<sup>342</sup> (2) guarding against an enemy surprise attack (nuclear and conventional) through careful preparation, air defense planning, concealment and camouflage of potential targets, and intelligence and reconnaissance, and (3) conducting nuclear missile attacks.<sup>343</sup>

**Central Control.** Central control of combat operations and the strict adherence to central-level guidance is one of the most prominent characteristics of a Second Artillery nuclear retaliation campaign. (This is neither unique nor surprising.) The authors of *Zhanyixue* give careful consideration to the strategic importance of all decisions related to the prosecution of a nuclear retaliation campaign. They point out that such a campaign

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<sup>339</sup> Basically, a *juntuan* refers to the group armies for the ground forces, the seven military region air forces (MRAF) for the air force, and the three fleets (North Sea Fleet, East Sea Fleet, and South Sea Fleet) for the navy.

<sup>340</sup> Throughout this section, unless otherwise noted, statements describing Second Artillery campaigns, missions, requirements, etc. are listed as described in Chapter 14 of *Zhanyixue*.

<sup>341</sup> *Zhanyixue*, pg. 368. Literally: *Tanhuan qi zhihui xitong, xiaoruo qi zhanzheng qianli, cuobai qi zhanlüe qitu, dangyao qi zhanzheng yizhi, ezhi hezhanzheng shangji*; 瘫痪其指挥系统, 削弱其战争潜力, 挫败其战略企图, 动摇其战争意志, 遏制核战争升级。

<sup>342</sup> Some scholars have described the concept of "counter-nuclear deterrence combat" as establishing and maintaining second-strike capability.

<sup>343</sup> *Zhanyixue*, pg. 372-374.

will have decisive influence over the process and results of the war and, more importantly, that such a campaign will have a great effect on the “overall situation” of the national political, economic, diplomatic, and military struggle. Because the campaign carries out a strategic-level mission, it is under the direct command of the “supreme leader,” which in this case means the Chairman of the Military Commission of the Communist Party’s Central Committee, commonly known as the CMC.

**Absorbing a First Strike.** A second characteristic of a nuclear retaliation campaign is that, at least on paper, China has a “no first use” policy and implies that it will absorb the first strike of a nuclear conflict, and that any nuclear retaliation campaign will be fought only after China has absorbed such an attack.<sup>344</sup> The grim circumstances under which such a campaign would be fought are given no small amount of attention. The authors of *Zhanyixue* write that Second Artillery’s strategic missile force will be a key target and will likely suffer from an enemy nuclear attack and assume that they will be operating after suffering serious losses of personnel, equipment, and infrastructure. For this reason, the importance of protecting their strategic nuclear missile force while absorbing this first blow and maintaining a strategic force reserve in order to carry out a retaliation campaign is given particular emphasis. Not surprisingly, they consider it to be one of the most important tasks of, and a precondition for, a nuclear retaliation campaign.<sup>345</sup>

**Dispersed Deployment.** In order to aid in protecting Second Artillery’s strategic nuclear missile force, deployment for this type of campaign should be highly dispersed. This, in turn, is recognized as making command and control more difficult and heavily dependent on survivable telecommunications systems. In addition, these types of campaigns are technically complex and require a high level of integration. Therefore, equipment and personnel used for support (*baozhang*; 保障) are also crucial to the successful prosecution of nuclear retaliation campaigns—and thus key targets for enemy attack.

**Critical Needs.** The authors of *Zhanyixue* identify the following as critical for successfully prosecuting this type of campaign: (1) establishing a highly centralized and unified command where issues such as campaign guidance, campaign goals, deployment, targets, and timing are decided by the “supreme commander,”<sup>346</sup> (2) maintaining an ability to operate in close coordination with other parts of Second Artillery and with the PLA as a whole, (3) ensuring a rapid response capability through the preparation of personnel, weapons and equipment, combat positions, command systems, and a variety of combat support measures, (4) preparing careful plans on the details of protecting the strategic nuclear missile force from nuclear, chemical, biological, and missile attacks, (5)

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<sup>344</sup> For a detailed discussion of China’s no first use policy, see “The Chinese Second Artillery Transition to Credible Deterrence” by Bates Gill, James Mulvenon, and Mark Stokes, in *The People’s Liberation Army as Organization*, eds., James Mulvenon and Andrew Yang, Santa Monica, CA: RAND, 2002.

<sup>345</sup> *Zhanyixue*, pg. 370.

<sup>346</sup> *Tongshuai* or 统帅 in original text, *Zhanyixue*, pg. 371.

maintaining an ability to work in extremely hostile environments and under very difficult circumstances, and (6) maintaining the necessary reserve force for a nuclear retaliation campaign.

### **The Rise of Conventional Missiles**

PLA thinking on the importance and relevance of conventional missiles has been an area of great change over the past decade. Since the founding of Second Artillery, and throughout the duration of the Cold War, China's strategic thinkers understood that the possession of nuclear missiles was a critical aspect of China's military strength and a key to attaining at least some of its strategic aims. However, according to *Zhanyixue*, after the Cold War, the utility and importance of nuclear missiles were seen to have decreased. At the same time, especially with the development of precision-guided munitions, the utility and strategic importance of conventional missiles has increased greatly. The authors of *Zhanyixue* explain that it was only with the end of the Cold War that conventional missile attack campaigns became one of the key types of modern warfare. Although it had previously been given less attention, it became *the* main type of campaign involving surface-to-surface missile attacks.<sup>347</sup> For this reason, it is worthwhile to examine the development of Second Artillery's conventional missile doctrine.

Second Artillery's conventional missile force was not established until the early 1990s. According to *Zhanyixue*, it was not until 1998 that Second Artillery developed the concepts referred to in this paper as the "conventional missile attack campaign" and compiled its first instructional textbook, entitled *Second Artillery Conventional Missile Attack Campaign* [*Dierpaobing Changgui Daodan Tuji Zhanyi*; 第二炮兵常规导弹突击战役]. Shortly thereafter, the PLA published *The Essentials of Campaigns of the People's Liberation Army Second Artillery* [*Zhonghua Renmin Jiefangjun Dierpaobing Gangyao*; 中国人民解放军第二炮兵纲要]. Beyond what is written in Chapter 14 in *Zhanyixue*, little is known about the contents of these documents. Scholarly articles from the mid-1990s address some of the key issues, but, as has been pointed out earlier in this volume, examining such materials sensitizes us to the range of views, but does not necessarily inform on the outcome of this process of experimentation and debate.

One source that does provide some authoritative insights into PLA thinking on conventional weapons strategy as a whole, however, is the Academy of Military Science's (AMS's) 2001 publication entitled *The Science of Strategy* [*Zhanlüexue*; 战略学].<sup>348</sup> The authors of this book divide PLA thinking on conventional weapons strategy into two broad categories: (1) conventional weapons strategy pertaining to periods in which there is no nuclear threat, and (2) conventional strategies that pertain to operating under the existence of a nuclear threat.<sup>349</sup> They discuss the implications of the nuclear

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<sup>347</sup> *Zhanyixue*, Chapter 14.

<sup>348</sup> In 1999 the National Defense University published a book by this same title.

<sup>349</sup> *Zhanlüexue* [The science of strategy], AMS publishing house, 2001, pp 17-26.

threat on conventional operations, and examine how the strategic importance of conventional weapons has changed with the end of the Cold War. For example:

High-tech conventional war strategy was born out of the development of a series of non-nuclear high-tech and new military technologies such as electronic computer technology, precision guidance technology, laser technology, remote attack technology and space technology in the new revolution of military development after the 1970s of the 20<sup>th</sup> Century. The application of these non-nuclear high and new technologies has a strategic effect similar to nuclear weapons while avoiding the huge political risk of stepping over the nuclear threshold. Therefore, its importance and position rises day by day, becoming a new and more popular strategic model for countries.<sup>350</sup>

Given the relative youth of Second Artillery's conventional missile force and the operational concepts which it will utilize in training to prosecute its campaigns, and the critical role this force will play in the PLA's larger vision of jointness and integrated operations and key point strikes, operational concepts for the Second Artillery will most likely continue to evolve over the coming years. Tracking these developments, and separating authoritative writings from scholarly debate will be a challenge for PLA watchers in the years to come.

## CONVENTIONAL MISSILE ATTACK CAMPAIGNS

*Zhanyixue* describes a conventional missile attack campaign as consisting of (1) a conventional missile attack and (2) all related combat operations conducted by a conventional missile campaign *juntuan* (军团) for the purpose of achieving the overall or local goals of war. Unlike a nuclear retaliation campaign, which is usually an independent campaign, a conventional missile attack campaign is usually an important part of a joint campaign (*lianhe zhanyi*; 联合战役) and only under special circumstances would it be conducted independently.

The basic operations of this type of campaign as defined in *Zhanyixue* are: (1) to use conventional missiles to deter enemy strategic intentions and discourage military adventurism, (2) to conduct conventional missile attacks, (3) to conduct "missile firepower blockades" (low-intensity missile attacks on the key targets upon which the enemy relies for land, air, and sea mobility that are intended to block or inhibit the mobility of enemy troops and supplies), (4) to conduct "missile firepower disturbance" (random and small scale conventional missile attacks to disturb the enemy and disrupt daily life in order to increase psychological pressure),<sup>351</sup> (5) to conduct "missile force

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<sup>350</sup> *Zhanlüexue*, p 20-21.

<sup>351</sup> Note: this is apparently very similar to what the US referred to as harassment and interdiction fire (H&I) during the Vietnam War.

mobile combat” (troop movement and missile attack conducted to enhance survivability of the missile force), and (6) to conduct “missile firepower mobile combat” (adjusting the attack missions of parts of the missile force without changing the force deployment).

The authors of *Zhanyixue* characterize conventional missile attack campaigns as highly effective, complex in terms of organization, command and control, and support, and vulnerable to enemy disruption.

**Highly Effective.** These campaigns are seen to be effective because conventional missiles have long-range capabilities, and can make possible a sudden, accurate, powerful, and distant strike on key enemy targets.

**Complex.** Conventional missile attack campaigns are considered complex because the operations involved are technologically advanced and highly integrated. The authors of *Zhanyixue* rightly point out that a small error in any of the tactical or technical variables that play into a command decision can have a large and direct effect on the results of the campaign. Personnel, equipment, organization, and logistics play a major role in determining the success or failure of this type of campaign. Furthermore, since Second Artillery most often carries out a conventional missile attack campaign as part of a larger joint campaign, this complex coordination needs to take place not only internally, but also between Second Artillery and the campaign forces of other services. Because the weapons used in a conventional missile attack campaign are technically sophisticated and the battlefield is wide and dispersed, maintaining coordination with other services with regard to organization, command, and safeguarding and support is especially important.

**Unified, Central Command.** Like nuclear retaliation campaigns, conventional missile attack campaigns are also seen to possess the potential to affect profound changes on the “overall political, diplomatic, and military struggle.” For this reason, the maintenance of a unified central command is believed to be extremely important. It should be noted, however, that unlike the case of nuclear retaliation campaigns, in which the campaign commander was identified to be none other than the “supreme commander,” in the case of a conventional missile attack campaign, the identity of those who possess launch authority is less clear-cut. The authors of *Zhanyixue* write that during this type of campaign, the combat methods, intensity, and time of execution should be centrally controlled “by the campaign commander, or even the supreme commander.”<sup>352</sup>

**Difficult to Protect.** PLA strategic thinkers characterize conventional missile attack campaigns as vulnerable to enemy disruption and comment on the need to pay great attention to defense for two reasons. First, the missile force is widely dispersed, creating a large area to manage and many separate targets to protect. Second, because Second Artillery’s conventional missile force is technically advanced and this type of campaign requires such a high degree of coordination, attacks on the missiles themselves, as well as on the campaign personnel, equipment, and critical infrastructure have the possibility of disrupting the campaign. This is particularly true in cases where the enemy possesses advanced reconnaissance systems and precision guided munitions.

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<sup>352</sup> *Zhanyixue*, pg. 379-380.

**Limited Size of Force.** The authors of *Zhanyixue* also recognize that Second Artillery's conventional missile force is limited in number and size. Therefore, they emphasize the need to concentrate firepower on the most critical (e.g. those that paralyze the enemy) or threatening enemy targets.

While Second Artillery continues to develop its campaign theory, a rational organizational structure and highly skilled personnel are required to maintain and operate the high-tech weaponry involved, manage operations, and to perform all of the specialized logistics and support of both nuclear and conventional missile campaigns. This organization and its personnel must be trained and prepared to work under the assumed difficult conditions they would be assumed to face in an actual campaign—manning weapon systems that the enemy would consider to be key and primary targets. Assignment to these units carries with it the risk of high casualties, and the likelihood of working in the midst of a missile assault, and at worst, in the aftermath of a nuclear, chemical, or biological attack. For this reason, the remainder of this paper will focus on the institutional enablers that Second Artillery currently has in place to support these campaigns.

## ORGANIZATIONAL STRUCTURE

Of course, any reform that occurs within Second Artillery will be instituted through an administrative and organizational structure. This structure can either support or limit the PLA's efforts at modernization.

### China's Armed Forces Components

One cannot examine Second Artillery's organizational structure without first understanding how it fits into the PLA as a whole. PLA writings generally describe the armed forces as consisting of leadership and command organizations (*lingdao zhihui jiguan*; 领导指挥机关), services (*junzhong*; 军种), branches (*bingzhong*; 兵种), logistics support (*houqin baozhang*; 后勤保障) organizations, academies and schools (*yuanxiao*; 院校), training (*xunlian*; 训练) units, and research institutes (*junshi yanjiusuo*; 军事研究所). The three services are the army (ground forces), navy (PLAN), and air force (PLAAF). Second Artillery is described as an independent branch that is considered equal to the three services (*xiangdang yu junzhong de duli bingzhong*; 相当与军种的独立兵种).<sup>353</sup> The PLA describes its leadership and command structure as follows:<sup>354</sup>

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<sup>353</sup> Qian Haihao, ed., *Jundui zuzhi bianzhixue jiaocheng* [Course material for the study of military organizational structures], Beijing, Academy of Military Science Press, March 2001, 75; *Zhongguo junshi baike quanshu* [Chinese military encyclopedia], Beijing, Academy of Military Science Publishers, July 1997, Volume 2-348. According to interviews with PLA officials, the PLA has debated for several years whether or not to make Second Artillery a service.

<sup>354</sup> *Junshi zuzhi tizhi yanjiu* [Military organization system research], Beijing: NDU Publishers, June 1997, 372. The PLA uses the term *lingdao* (领导) for leadership, *zhihui* (指挥) for command, *kongzhi* (控制)

- The CCP Central Committee and its subordinate Military Commission implement leadership and command for the ground forces, PLAN, PLAAF, and Second Artillery through the four general departments (General Staff, Political, Logistics, and Equipment).
- Ground force troops residing within the military regions (MR/*junqu*; 军区) are part of the MR organizational structure and come under the MR's leadership and command.
- PLAN and PLAAF units deployed within the military regions are organizationally part of their services but come under the dual leadership of the service headquarters and the MR leadership authorities. During peacetime, the PLAN and PLAAF headquarters are responsible for operational command, military training, equipment management, organization development, political work, logistics work, and administrative management of their respective forces. During wartime, the war zone (*zhanqu*; 战区) leadership authority takes operational command of PLAN and PLAAF units within the war zone.
- The command structure for Second Artillery is somewhat different than that of the three services. Although Second Artillery troops are located within the MRs, Second Artillery implements what has been referred to as vertical command (*chuízhǐ zhīhuī*; 垂直指挥).<sup>355</sup>

### Second Artillery Structure

Because Second Artillery is one of the least transparent entities within the PLA, gathering information on its organizational structure has been a challenge. Mark Stokes' writings in 1999 on China's strategic modernization provided the first good list of bases

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for control, and *lingdao zhihui* (领导指挥) for leadership and command. The PLA makes a clear distinction when to use each word separately and together.

<sup>355</sup> *Junshi zuzhi tizhi yanjiu*, p. 372. The term vertical command is not further defined but appears consistently in conjunction with Second Artillery. In civilian party and government units, *chuízhǐ* leadership means that the entire system, from the center to the lowest levels, is led by a vertical chain of command of the professional or technical unit, rather than the local geographical party and government units. State Security units, for example, reportedly are led primarily by higher level state security offices rather than local party committees. In the case of the Second Artillery, this suggests that they may be more strictly under the leadership of higher level Second Artillery, rather than MR leadership, than most other PLA units.

and brigades.<sup>356</sup> Scholarly articles and various websites on the subject produced since then, however, have used Stokes' material without updating the data.<sup>357</sup>

Second Artillery, with an estimated 100,000 personnel, has an administrative structure and an operational structure consisting of Headquarters Second Artillery and six army-level launch bases.<sup>358</sup> It also has one test and training base, two command academies, one engineering design academy, four research institutes, and possibly an early warning unit.

### Administrative Structure

Prior to 1998, Second Artillery had four first-level departments—Headquarters (*silingbu*; 司令部), Political (*zhengzhibu*; 政治部), Logistics (*houqinbu*; 后勤部), and Technical Equipment (*jishu zhuangbeibu*; 技术装备部).<sup>359</sup> The first three were a mirror image of the General Staff Department (GSD), General Political Department (GPD), and General Logistics Department (GLD). The Technical Equipment Department did not have an equivalent general department level organization, but worked closely with the GSD and GLD for their respective functions. Its primary responsibilities included equipment R&D, maintenance, repair, and procurement. Following the creation of the General Equipment Department (GED) in 1998, the Technical Equipment Department was reorganized and changed its name to Equipment Department (*zhuangbeibu*; 装备部)

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<sup>356</sup> Mark Stokes, "Weapons of Precise Destruction: PLA Space and Theater Missile Development," *China and Weapons of Mass Destruction: Implications for the United States*, Conference Report, 5 November 1999, 203-205; Mark A. Stokes, "China's Strategic Modernization: Implications for the United States," U.S. Army Strategic Studies Institute, September 1999, 93.

<sup>357</sup> Examples of various websites using Stokes' data include the following: John Pike's GlobalSecurity.org (<http://www.globalsecurity.org/wmd/world/china/missile-facility.htm>), China Software of unknown affiliation (<http://www.softwar.net/dongfeng.html>), the Federation of American Scientists (<http://www.fas.org/nuke/guide/china/agency/2-corps.htm>), Ted Turner and Senator Sam Nunn's the Nuclear Threat Initiative/NTI organization (<http://www.nti.org/db/china/sac.htm>), and the Wisconsin Project (<http://www.wisconsinproject.org/countries/china/missile-miles.htm>). Bill Gertz from the *Washington Times* and various news reporters in Taiwan provide bits and pieces of information from the U.S. and Taiwan intelligence communities, which is further disseminated and incorporated into the website information.

<sup>358</sup> Figures for Second Artillery's strength varies from 90,000 to 128,000. In 2002, Ellis Melvin calculated the present strength at 100,000 based on the number of deputies in the 9<sup>th</sup> National People's Congress and the increase of units. A rough estimate can be made by taking the total number of PLA delegates representing the total PLA strength and calculating the 2nd Artillery's portion of that strength by its number of deputies. The figure 90,000 comes from Mark Stokes, "Weapons of Precise Destruction: PLA Space and Theater Missile Development," *China and Weapons of Mass Destruction: Implications for the United States*, Conference Report, 5 November 1999, 203-205. The Republic of China's *2002 National Defense Report* states Second Artillery has 128,000 personnel. 2002 National Defense Report, Taipei, Taiwan, [www.mnd.gov.tw/report](http://www.mnd.gov.tw/report), July 2002, Part 1, Chapter 4.

<sup>359</sup> *Shijie junshi nianjian* [World military yearbook], PLA Press, Beijing, 1987-2001.

to match the PLAN and PLAAF structure.<sup>360</sup> It also took over some of the functions previously under the headquarters and logistics departments.

Like Second Artillery Headquarters, missile bases have a Headquarters Department, a Political Department, Logistics Department, and an Equipment Department. Missile brigades and support regiments have a Headquarters Department, Political Division (*chu*; 处), Logistics Division, and Equipment Division.<sup>361</sup> The Second Artillery logistics director most likely serves as the base commander at the brigade level and below much like the logistics directors at PLAAF and PLAN division-level operational organizations and below (aviation airfields and naval bases).

It is not clear what the administrative structure for a launch battalion is, but it is probably similar to other PLA battalions that include a Headquarters Department, Political Division, logistics organization, and equipment organization. While regiments and above have political commissars (*zhengwei*; 政委), battalions and companies have political instructors (*jiaodaoyuan*; 教导员 for battalions and *zhidaoyuan*; 指导员 for companies). The logistics administrative organization probably has subordinate offices (*ke*; 科), branches (*gu*; 股), or sections (*zu*; 组) for materiel, quartermaster, finance, transportation, and housing, etc. and their support companies and elements (*baozhang liandui he fendui*; 保障连队和分队). The equipment organization, which probably consists of the appropriate administrative offices, branches, or sections and support companies and elements, is primarily responsible for maintenance and repair.

Similar to the GSD and the Headquarters Department within the military regions, PLAN, and PLAAF, the second level organizations within the Second Artillery Headquarters Department and the bases most likely include operations, intelligence, communications, military affairs, training, and mobilization departments.<sup>362</sup>

### Operational Structure

According to PLA writings, Second Artillery consists of nuclear strategic and nuclear and conventional tactical missile brigades equipped with short-range (*jincheng*; 近程), medium/intermediate-range (*zhongcheng*; 中程), long-range (*yuancheng*; 远程), and intercontinental (*zhouji*; 洲际) ballistic missiles,<sup>363</sup> as well as all types of support

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<sup>360</sup> The PLA Navy had as many as five first level departments, the PLA Air Force had four first level departments, and the military regions only had three. After the General Equipment Department was established, all of the services, branches, and military regions realigned their administrative structures to be in conformity with the four general departments.

<sup>361</sup> Qian Haihao, ed., *Jundui zuzhi bianzhixue jiaocheng* [Course material for the study of military organizational structures], Beijing, Academy of Military Science Press, March 2001, 207, 220.

<sup>362</sup> *Ibid.*, p. 82.

<sup>363</sup> Almost every PLA article on the Second Artillery, including all of the PLA yearbooks, has this basic description. Chinese dictionaries translate *zhongcheng daodan* as both medium and intermediate-range missiles. According to *Zhongguo junshi baike quanshu* [Chinese military encyclopedia], Beijing: Academy

(*baozhang*; 保障), engineering (*gongcheng*; 工程), and specialized (*zhuanye*; 专业) troops.

Second Artillery has six organizational levels—Second Artillery Headquarters (*erpao*; 二炮), army-level (*junji*; 军级) missile bases (*daodan jidi*; 导弹基地), missile brigades (*daodan li*; 导弹旅), launch battalions (*fashe ying*; 发射营), launch companies (*fashe lian*; 发射连) and launch platoons (*fashe pai*; 发射排).<sup>364</sup> Company and platoon launch entities are sometimes referred to as launch elements (*fashe fendui*; 发射分队).<sup>365</sup> To facilitate command and logistics, these key operational strike organizations are likely assigned only one type of missile (See Appendix B for detailed information on each of the six levels).

The structure differs below the launch battalion level for the strategic nuclear force (*zhanlüe hedaodan budui*; 战略核导弹部队) and the conventional missile force (*changgui daodan budui*; 常规导弹部队).<sup>366</sup> For the strategic nuclear force, each launch battalion has several subordinate launch companies, which are the smallest nuclear force launch organizations.

A typical conventional missile brigade includes a mobile command post, a central depot, a transfer point, and an assigned set of pre-surveyed launch sites, as well as a set of reserve launch sites.<sup>367</sup> Conventional missile brigades have at least three launch

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of Military Science Publishers, July 1997, Volume 2-51, *jincheng* refers to less than 1000 km, *zhongcheng* to 1000-3000 km, *yuancheng* to 3000-8000 km, and *zhouji daodan* covers ranges greater than 8000 km.

<sup>364</sup> Qian Haihao, ed., *Jundui zuzhi bianzhixue jiaocheng* [Course material for the study of military organizational structures], Beijing: Academy of Military Science Press, March 2001, p. 40. The term *erpao* or *dierpaobing* means Second Artillery as a whole. When *erpao* is used alone it also means Second Artillery Headquarters. When seen in a newspaper or book, the exact meaning is usually clear. The PLA does not use the term *erpao zongsilingbu* for Second Artillery Headquarters. When *erpao silingbu* or *ersi* is used, it refers to the Headquarters Department within Second Artillery Headquarters. Some Western organizations translate launch elements as launch batteries.

<sup>365</sup> *Zhongguo junshi baike quanshu* [Chinese military encyclopedia], Beijing, Academy of Military Science Publishers, July 1997, Volume 2-41-42. According to the AMS Encyclopedia, *daodan fashe fendui* (missile launch *fendui*) is the common term for elements below the battalion level (*ying yixia*; 营以下) that are responsible for launching missiles. In the PLA's context, this means a company or platoon. The photo accompanying the definition shows a DF-21/CSS-5 missile TEL.

<sup>366</sup> Qian Haihao, ed., *Jundui zuzhi bianzhixue jiaocheng* [Course material for the study of military organizational structures], Beijing: Academy of Military Science Press, March 2001, 207-210; *Junshi zuzhi tizhi yanjiu* [Military organization system research], Beijing: NDU Publishers, June 1997, 396.

<sup>367</sup> This paragraph comes from Mark Stokes, "Weapons of Precise Destruction: PLA Space and Theater Missile Development," *China and Weapons of Mass Destruction: Implications for the United States*, Conference Report, 5 November 1999, pp. 215-217. Stoke's material came from the following sources: For reference to a fourth battalion within a Second Artillery brigade structure, see "Guangrong bang" [Glorious honor roll], *Flying Eagle*, 2 Nov 1993, p. 10; Senior Colonel Wang Benzhi, "Didi changui daodan huoli yunyong de jige wenti [Some questions related to the use of conventional surface-to-surface missile firepower]," in *Lianhe zhanyi yu junbingzhong zuozhan* [Joint theater and service operations], Beijing: National Defense University Press, 1998, pp. 236-241. SrCol Wang is the Chief of Staff of the Second

battalions, with each battalion assigned at least three launch companies. Depending on the type of missile system, each launch company may have at least three subordinate launch platoons. Each launch company or platoon would likely be assigned at least one launcher, an electric power generation vehicle, a surveying vehicle, a communications command vehicle, and a missile transport vehicle. Battalions and companies would be assigned a zone within which to operate.

The basic firepower unit (*jiben huoli danwei*; 基本活力单位) for Second Artillery's nuclear and conventional forces are different. The launch battalion is the basic firepower unit for the nuclear force. Although the conventional force has launch companies and launch platoons, the launch platoon is the conventional force's basic firepower unit.

Although the exact personnel structure for launch platoons, companies, and battalions, as well as for the various support *fendui* (分队) is not available, the question arises as to the challenges posed by the differences in operational experience of the conscripts, non-commissioned officers (NCOs), and officers at each level. As will be discussed later, one-half of the two-year conscript force turns over every year and it was not until quite recently that the PLA began to take serious steps to develop a professional NCO corps. Furthermore, the experience level of a platoon, which is normally commanded by a second lieutenant, is not going to be as high as that of a company (commanded by a captain) or a battalion (commanded by a major or lieutenant colonel). It is not clear how all of this has affected Second Artillery's training and readiness, especially at the lowest levels.

## SECOND ARTILLERY MISSILE ORDER OF BATTLE

As stated in the introduction of this paper, one aspect of Second Artillery's reform program is an increase in the total number of ballistic missiles. There are varying estimates as to the current size of the force and of how quickly the number of missiles will increase over the next several years. It is not the purpose of this paper to attempt to estimate the total number of missiles in Second Artillery's inventory. There are several reasons for this. First, the Chinese do not provide public information on their missile systems, size of the missile force, or the deployment status. For example, China's 1998 National Defense White Paper did not even mention China's ballistic missiles and the 2000 report merely stated, "Second Artillery is composed of strategic missile, conventional missile, and other specialized units."<sup>368</sup> The 2002 White Paper stated, "The

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Artillery Huaihua Base (80305 Unit). One source states that an operational zone could be 20-40 square kilometers. It is unclear what echelon would operate in this size zone. See Lu Xiaohong, "Daodan jidong fashe zhuangbei ji dimian shebei weizhuang yu yinshen jishu fenxi [Analysis of mobile missile launch and ground equipment camouflage and stealth technology]," in Xu Dazhe, *Guowai dandao daodan jishu yanjiu yu fazhan* [Study and development of foreign ballistic missile technology], Beijing: Astronautics Press, October 1998, pp. 193-202.

<sup>368</sup> *China's National Defense*, Beijing: Information Office of the State Council of the People's Republic of China, July 1998. "China's National Defense in 2000," *Xinhua*, 16 October 2000.

strategic nuclear missile force, under the direct command of the CMC, constitutes the main part of China's limited nuclear counterattack capability. It is equipped with land-based strategic nuclear missile systems. The conventional campaign and tactical missile force has conventional missiles."<sup>369</sup>

Second, any discussion of China's overall missile force gets bogged down in debates over issues such as (1) the number of missiles of each type currently in the inventory, (2) China's development and possible use of multiple reentry vehicles (MRVs) and/or multiple independently targetable reentry vehicles (MIRVs) to compensate for the lack of a large number of missiles, (3) the number of reserve missiles that are, and will be, available for per launcher, and (4) the size and type of force China will deploy against any type of missile defense system.

**Inconsistent Data.** One of the most often used public sources of data on the size of China's ballistic missile force is the *Nuclear Weapons Databook, Volume V: British, French, and Chinese Nuclear Weapons*, which was published in 1994.<sup>370</sup> Many non-government reports and websites use this report as a starting point for their own data. Unfortunately, the *Databook* has not been updated.<sup>371</sup> Since the late 1990s, various U.S. government (USG) agencies, including the Department of Defense (DoD) and National Intelligence Council (NIC), have released reports covering China's ballistic missiles, but these reports have not helped clarify the situation.

Several non-government analysts and research organizations have also tried to reconcile the available numbers. It has been difficult, however, to track the actual growth of China's ballistic missile force based on the lack of historical data available in the public realm. Furthermore, the USG has not used consistent formats for its annual reports, nor have the reports provided specific data on the types, numbers, deployment status, and reload capabilities of missiles as was done in the annual report on *Soviet Military Power* during the 1980s.

Normally, the USG reports provide estimates of missiles rounded off to the nearest five in each class or the total number of warheads, which includes those for the PLA Navy's sea launched ballistic missiles (SLBMs). For example, a 2002 National Intelligence Estimate (NIE) states, "The Intelligence Community has differing projections of the overall size of Chinese strategic ballistic missile forces over the next 15 years, ranging from about 75 to 100 warheads deployed primarily against the United States."<sup>372</sup> The 2002 DoD report to Congress states that China has "approximately 20

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<sup>369</sup> "White Paper on China's National Defense in 2002," *Xinhua*, 9 December 2002.

<sup>370</sup> Robert S. Norris, Andrew S. Burrows, Richard W. Fieldhouse, *Nuclear Weapons Databook, Volume V: British, French, and Chinese Nuclear Weapons*, Westview Press, 1994.

<sup>371</sup> Discussion with one of the authors reveals that much of the data in the report itself was speculative and was difficult to gather in the first place.

<sup>372</sup> "Foreign Missile Developments and the Ballistic Missile Threat Through 2015," National Intelligence Officer for Strategic and Nuclear Programs, January 2002. There is a debate within the U.S. whether China will use maneuverable reentry vehicles (MRVs) and/or multiple independently targetable reentry vehicles (MIRVs) to compensate for the lack of missile numbers.

CSS-4s” and “the number of ICBMs capable of targeting the United States will increase to around 30 by 2005 and may reach 60 by 2010.”<sup>373</sup> Occasionally, the reports provide more exact figures. For example, DoD’s 2000 report to Congress on China’s military states, “China reportedly has built 18 CSS-4 silos.”<sup>374</sup> In the case of silo-based ICBMs, the number of missiles appears to equal the number of launchers.

As noted, these reports discuss numbers of missiles and warheads, but do not provide an organizational breakout in terms of bases, brigades, and launch elements (battalions, companies, and platoons) and number of launchers for each entity. For example, since China launched several missiles near Taiwan in 1995 and 1996, a great deal of attention has been paid to the growing number of SRBMs opposite Taiwan. Since 1999, various reports have indicated China began with a modest force of 30-50 CSS-6 SRBMs in 1995, is increasing its force by about 50 missiles per year, and will eventually deploy about 650 missiles in seven brigades opposite Taiwan by 2005.<sup>375</sup> Some news

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<sup>373</sup> Secretary of Defense, “Annual Report on the Military Power of the People’s Republic of China,” Report to Congress Pursuant to the FY2000 National Defense Authorization Act, July 2002.

<sup>374</sup> Secretary of Defense, “Report on the Current and Future Military Strategy of the People’s Republic of China,” Report to Congress Pursuant to the FY2000 National Defense Authorization Act, 23 June 2000.

<sup>375</sup> The 1999 NIC report emphasizes that China is significantly improving its theater missile capabilities and is increasing the size of its SRBM force deployed opposite Taiwan. The current trend indicates an increase of about 50 missiles per year that began with a modest force of 30-50 M-9/11 SRBMs in 1995. The primary factors that will influence the eventual size and composition of this force include the political situation (domestic, regional, and international), doctrinal considerations, strategic and tactical requirements, technology developments, production capacity, and the PLA’s organizational structure. Any or all of these factors could cause adjustments up or down in the size and deployment rate of the force over the next ten to fifteen years. Beginning in 1999, media reports in the U.S. and Taiwan cited an unpublished DoD report that stated China may have 650 SRBMs deployed opposite Taiwan by 2005. In December 2000, the *Taipei Times* reported that “An intelligence official notes that China had one theater missile brigade in 1995 and the number has since grown to three. China is expected to have seven theater missile brigades by between 2005 and 2010.” The 2002 DoD report to Congress states, “China has approximately 350 SRBMs already in its deployed inventory, increasing at about 50 missiles per year. The number of missiles will increase substantially over the next several years.” Sources: National Intelligence Council, *Foreign Missile Developments and the Ballistic Missile Threat to the United States through 2015*, September 1999; “US calls in China’s ambassador over Taiwan,” *Agence France Presse*, 16 March 2000 (a full copy of his speech given at the Carnegie Endowment for International Peace can be found at <http://www.pacom.mil/ref/2000/sst/CARNEG.htm>); Tony Walker and Stephen Fidler, “China builds up missile threat: Deployment against Taiwan poses policy headache as Clinton prepares to meet premier Zhu,” *Financial Times*, 10 February 1999; Bill Gertz, “China strengthens position near Taiwan,” *Washington Times*, 26 February 1999. These articles cited unnamed US intelligence sources who said Beijing plans to increase the number of SRBMs opposite Taiwan to 650 missiles by 2005. Prepared Testimony of Vice Admiral Thomas R. Wilson Director, Defense Intelligence Agency Before the Senate Intelligence Committee, *Federal News Service*, 2 February 2000. Vice Admiral Wilson told the Senate Intelligence Committee that by 2015, Chinese forces will be much better equipped, possessing more than a thousand theater-range missiles. This figure most likely includes MRBMs as well as SRBMs. For example, see Howard Diamond, “China Warns U.S. on East Asian Missile Defense Cooperation,” in *Arms Control Today*, January/February 1999, [http://www.armscontrol.org/act/1999\\_01-02/chjf99.asp](http://www.armscontrol.org/act/1999_01-02/chjf99.asp); Nadia Tsao, “Delegation Pressing for Aegis Sale,” *Taipei Times*, 18 December 2000, <http://www.taipetimes.com/News/archives/2000/12/18/0000065969>; *Annual Report on the Military Power*

reports indicate the SRBM brigades have 16 launchers and 96 missiles per brigade.<sup>376</sup> By examining the numbers reported over the past few years, it appears that 650 missiles would equate to seven brigades with a total of 112 launchers and six missiles per launcher.

To further confuse the issue in terms of the number of possible SRBMs in the region, the ground forces within the Nanjing MR began to convert at least one of its tube artillery brigades into an SRBM brigade in 1997.<sup>377</sup> Available media and government reports do not make it clear yet whether this brigade is directly subordinate to the Nanjing MR Headquarters or one of the group armies based in the Nanjing MR.

### **Current Operational Structure**

When trying to decipher these reports, it is useful to understand how ballistic missile brigades are organized and structured, and more important, to understand some of the possible ways in which this increase in the number of missiles would affect the Second Artillery's organizational structure.

Based on existing open source material, Second Artillery currently has at least 16, and probably 19, missile brigades subordinate to the six missile bases as shown in Figure 6.1 below.<sup>378</sup> But public data is insufficient and the Second Artillery may have additional brigades not shown on the chart.<sup>379</sup>

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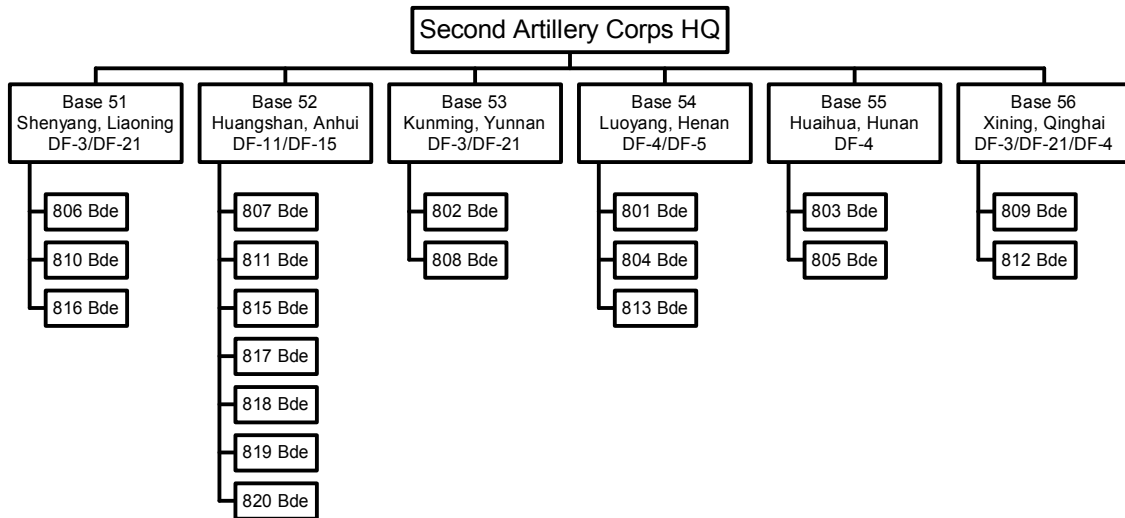
*of the People's Republic of China*, Department of Defense Report to Congress Pursuant to the FY2000 National Defense Authorization Bill, July 2002.

<sup>376</sup> <http://www.taiwandc.org/washt9905.htm>.

<sup>377</sup> *Jiefangjun bao*, 29 March 1999.

<sup>378</sup> The information in this chart is compiled from various "Directories of PRC Military Personalities." Thanks also go to Harlan Jencks and Ellis Melvin for their input and analysis. According to a review of various PLA writings, the 814<sup>th</sup> Launch Brigade was located in at a branch of the Second Artillery Command Academy in Qingzhou, Shandong. The branch was transformed into the Second Artillery NCO Academy in the 1990s. The current status of the 814<sup>th</sup> Launch Brigade is not certain, but it may have been incorporated into the academy or possibly deactivated. Various new reports have noted the 818<sup>th</sup> and 820<sup>th</sup> brigades are being formed under Base 52. Brian Hsu, "China Modifying Its Medium-Range Ballistic Missiles," *Taipei Times*, 15 July 2002. The reports of an eventual seven SRBMs brigades indicate there is also an 819<sup>th</sup> Brigade under Base 52 as well.

<sup>379</sup> Note that the six bases are located in six different military regions, but this appears to be by chance and geographical necessity rather than by design.



**Figure 6.1 Second Artillery Bases and Brigades**

Examining the organizational structure of the PLA as a whole from an historical perspective provides an analytical tool for understanding Second Artillery's current structure and to help predict its potential growth over the next decade.

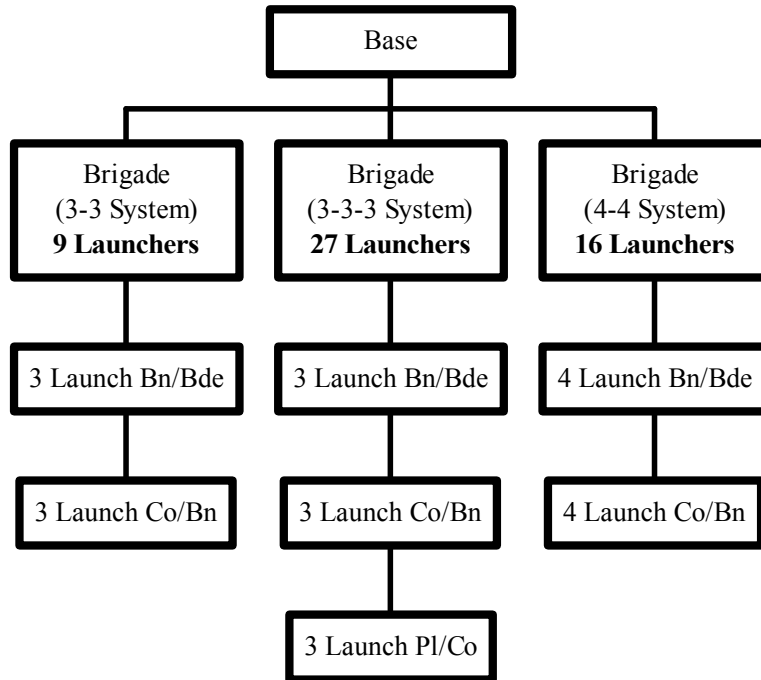
**The 3-3 and 4-4 Systems.** Beginning in the 1920s, the Red Army tried to structure its forces systematically using what is known as the 3-3 system (*sansanzhi*; 三三制). As a general rule, the 3-3 system means that each entity in the chain of command has three subordinate entities.<sup>380</sup> For example, an army has three divisions or brigades, which in turn have three subordinate regiments each, on down the chain of command. In 1930, the Red Army Congress formalized this structure when it decided that the entire military would be organized into *juntuan*, armies, divisions, regiments, battalions, companies, platoons, and squads.<sup>381</sup> In November 1948, the PLA underwent a major reorganization and used the 3-3 system as a basis.<sup>382</sup> Although major organizational changes have taken place in the ground forces' group armies since 1985, the legacy of the 3-3 system is still

<sup>380</sup> Yao Yanjing, Lai Mingchuan, Wang Yamin, *Junshi zuzhi tizhi yanjiu* [Military organization system research], Beijing: NDU Press, June 1997, p. 377; *Zhongguo renmin jiefang jun da shiji 1927-1982*, p. 284; Yuan Wei, ed., *Zhongguo renmin jiefang jun wu da yezhan budui fazhan shi lue* [History of the People's Liberation Army's five field armies], Beijing: PLA Press, 1987, 29.

<sup>381</sup> *Zhongguo junshi baike quanshu* [Chinese military encyclopedia], Beijing: Academy of Military Science Publishers, July 1997, Volume 7-401.

<sup>382</sup> *Zhongguo junshi baike quanshu* [Chinese military encyclopedia], Beijing: Academy of Military Science Publishers, July 1997, Volume 2-330.

in effect throughout much of the PLA today.<sup>383</sup> In some cases, however, the PLA uses a 4-4 system or possibly some combination of the 3-3 and 4-4 structure. In either event, the PLA has tried to maintain a consistent structural logic.



**Figure 6.2 Nominal Second Artillery 3-3 and 4-4 System**

Second Artillery apparently uses the 3-3 system for some bases and the 4-4 system for others. Basically, a 3-3 system means a missile brigade has three subordinate launch battalions, each of which has three subordinate launch companies or equivalent launch *fendui* for a total of nine launchers per brigade. Some brigades may have three launch platoons per launch company/*fendui* for a total of 27 launchers per brigade. A 4-4 system means each missile brigade has four subordinate launch battalions, each of which has four subordinate launch companies/*fendui* for a total of 16 launchers per brigade. This concept is shown in Figure 6.2 above.

## ORGANIZATIONAL ISSUES AND MOBILE LOGISTICS

Over the past few years, Second Artillery has upgraded its mobile logistics capabilities by creating various mobile *fendui* and integrating them into the peacetime

<sup>383</sup> Based on discussions with John Corbett.

and wartime command post system.<sup>384</sup> When missile troops conduct joint mobile operations, the base logistics organization establishes a main command post. The base logistics command post establishes communication links to the base operations command post, each missile unit logistics command post, and the war zone logistics command post. In addition, the base logistics command post creates a link to the front by establishing a forward command post at the unloading stations. The base logistics organization also deploys emergency support *fendui* to some of the logistics command posts, including the war zone command post.

Each base is classified as a rear area support entity, which normally has two types of support groups (*baozhang qun*; 保障群)—one main support group and one field mobile support group. The main support group is composed of troops from the base hospital, vehicle battalion, warehouse *fendui*, and base repair depot. Its responsibilities during peacetime are to: (1) establish medical, repair, and material storage areas and (2) fuel tanks. In areas where the threat of enemy attack is high, these facilities can be placed underground.

The field mobile support group has emergency mobile composite support *fendui* composed of troops from the base hospital, repair depot, vehicle battalion, and warehouse *fendui*. These troops are further organized into a field medical aid station, a field repair shop, a vehicle transportation *fendui*, and a materiel supply *fendui*.

Within the predetermined operations areas, the base's field mobile support group's emergency mobile composite support *fendui* work closely with the missile units' logistics *fendui*. If necessary, they can create roving support teams composed of medical, repair, transportation, and supply personnel to support the various launch *fendui*.

When equipment problems occur in the field, personnel from the base and missile unit repair shops try to fix the problem on site. If they cannot achieve this, then general-purpose equipment is sent back to the nearest war zone logistics repair organization or the closest local repair factory. Special-purpose equipment is returned to the base repair depot to be fixed.

Missile brigades are the primary organization responsible for providing supplies to their subordinate launch *fendui*. Missile units receive their special-purpose supplies from the missile base logistics depot and use the closest war zone logistics depot as the primary source for general-purpose supplies.

### Looking to the Future

By understanding the basic brigade organizational structure for the different types of missile systems, it should be easier to predict the incremental changes in China's future missile force. For example, Table 6.1 shows the number of launchers China could deploy using the 3-3 and 4-4 system.

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<sup>384</sup> Information on Second Artillery mobile logistics comes from Wen Guangchun, ed., *Jidong zuozhan houqin baozhang* [Logistics support for mobile operations], PLA General Logistics Department Headquarters Department, PLA Press, January 1997, 280-295.

<b>Brigades</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
<b>Launchers (3-3 System)</b>	9	18	27	36	45	54	63	72	81	90
<b>Launchers (3-3-3 System)</b>	27	54	81	108	135	162	189	216	243	270
<b>Launchers (4-4 System)</b>	16	32	48	64	80	96	112	128	144	160

**Table 6.1 Estimated Number of Launchers per Brigade**

Too often, large numbers are thrown out without basing them on an organizational methodology to predict the increase in missiles. For example, an August 2000 AFP report cited a secret USG report that stated, “China is already modernizing and modestly expanding its arsenal of around 20 intercontinental ballistic missiles, but in response to National Missile Defense (NMD) it would probably expand its force to as many as 200 missiles to overwhelm the U.S. shield’s capabilities.”<sup>385</sup> From an organizational perspective, an increase from the current 18-20 ICBMs to 200 would mean increasing the number of brigades from the existing two to about twenty brigades. If this were the case, the PLA would most likely have to create several new bases with multiple brigades per base, acquire all of the requisite equipment, and train the necessary enlisted and officer force. The question remains whether this is realistic.

Besides the number of launch entities, analysts should also look at whether the silos, transporter erector launchers (TELs), and erectors are single use or re-loadable. If they are re-loadable, analysts should look at how many missiles are available for each silo and TEL. Based on available information, Table 6.2 provides information on the existing systems, type of fuel, launch mode, reusability, and number of missiles per launcher.<sup>386</sup>

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<sup>385</sup> <http://www.spacedaily.com/news/bmdo-00zzv.html>.

<sup>386</sup> The information in this chart is a compilation of information from multiple websites, including the Monterey Institute of International Studies Center for Nonproliferation Studies (MIIS/CNS), the Carnegie Endowment for International Peace (CEIP), the Nuclear Threat Initiative (NTI), the USNI Military Database, and the Institute for International Strategic Studies (IISS), among others.

System	Fuel	Launch mode	Reusable launcher	Missiles per launcher
DF-3/CSS-2	Liquid	Road mobile erector	?	?
DF-4/CSS-3	Liquid	Silo elevate-to-launch; cave-based roll-out to launch TEL	No?	1?
DF-5/CSS-4	Liquid	Silo elevate-to-launch; cave-based roll-out to launch TEL	No?	1?
DF-15/CSS-6/M-9	Solid	Road mobile TEL	Yes	6
DF-11/CSS-7/M-11	Solid	Road mobile TEL	Yes	6
DF-21/CSS-5	Solid	Road mobile TEL	Yes	?
DF-31/CSS-9	Solid	Road mobile TEL	Yes?	?

**Table 6.2 Chinese Missile Systems and Launchers**

Regardless of what type of missile China chooses to deploy, any increase in the size of Second Artillery's missile inventory leads to several organizational, training, and possible political questions. As shown in Figure 6.1, the PLA could add a small number of new brigades to bases 51, 53, 54, 55, and 56 without much difficulty. However, if Second Artillery were to add several new brigades to any of the bases, it would most likely have to create new army-level bases to provide the proper span of control (Base 52, which is thought to have seven brigades, may already be too unwieldy to manage). Where would any new bases be located? What will Second Artillery have to do to train the troops to man the new units? Will Second Artillery's size have to increase at a time when the rest of the PLA is downsizing? What would the political ramifications in the region be if China began building entire new bases? Although beyond the scope of this paper, these questions are important, and worthy of further research.

## **PERSONNEL & EDUCATION**

Ultimately, it is people, in this case Second Artillery's personnel, who will be responsible for instituting change. As Second Artillery's Military Training Department has aptly written, "People are the core or soul of all the essential elements of combat capability and a decisive factor in the outcome of war."<sup>387</sup> As with the PLA as a whole, Second Artillery has undergone tremendous changes in recent years. As its technology and operational doctrine evolve, the methods Second Artillery employs to recruit, train, educate, and retain its needed personnel will play a large role in determining how close it will come to attaining its vision.

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<sup>387</sup> Military Training Department of the Second Artillery Command "New Expansion of Military Training Task," *Jiefangjun bao*, 8 October 2002.

## OFFICER ACCESSION

As the PLA adjusts to the demands of developing a military prepared to fight and win local wars under modern high-tech conditions, the need to move from a labor-intensive force to an expertise-intensive force has become clearer. One of the great challenges facing the PLA as a whole, and Second Artillery in particular, is identifying and recruiting quality officer candidates.

The PLA as a whole has addressed these issues through a series of programs designed to select officers from a larger, more diverse pool of candidates who are knowledgeable and skilled in a wide variety of areas, including advanced technologies, engineering, and social sciences. Some examples include the development of a more formal, widespread officer recruitment program at civilian universities, the establishment of on-campus officer recruitment offices at civilian institutions of higher education, and the creation of a national defense scholarship program to recruit young, potential PLA officers before they begin their civilian college studies.<sup>388</sup>

Although part of a larger trend, it should be noted that, on paper at least, there appears to be some room for variation of officer accession reform programs among the various services, branches, and MRs. For example, the 1999 *Circular on Developing Military Cadres* charges “the various MRs, services, branches, GSD, GLD, and GED, and the People’s Armed Police” to each select and broker agreements with one or two institutions of higher learning. It then charges them to set up selection and training organizations to select and develop officers in various manners.<sup>389</sup> Therefore, it is useful when looking at Second Artillery’s reforms in this area, to bear in mind that its progress might not always be a reflection of progress within the greater PLA.

Compared with the PLA as a whole, Second Artillery has been fairly successful at recruiting civilian college graduates. It has signed agreements with several civilian colleges and universities, including the Northwest Polytech University in Xian and the Hefei Industrial University.<sup>390</sup> In terms of raw numbers, Second Artillery ranks second in the number of actual civilian college graduates recruited each year, and it has the highest number of civilian college graduates in proportion to the size of its population.<sup>391</sup> Among

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<sup>388</sup> As of November 2001, Second Artillery was reported to have approximately 430 students participating in the national defense scholarship program. Chen Xinping and Zhang Xuanjie, “Strategic Missile Units Attract Large Numbers of Local University Students,” *Xinhua*, 26 November 2001. For a more detailed discussion of these efforts, see *Institutional Reforms of the Chinese People’s Liberation Army: Overview and Challenges* by Kenneth Allen, Dean Cheng, David Finkelstein, and Maryanne Kivlehan., Alexandria, VA: The CNA Corporation.

<sup>389</sup> “Military Issues Circular on Developing Military Cadres,” *Xinhua*, 3 August 1999.

<sup>390</sup> Wu Xudong and Zhang Xuanjie, “About 20 Percent of Officers Serving in China’s Strategic Missile Units Come from Colleges and Universities Across the Country,” *Xinhua*, 29 April 2002.

<sup>391</sup> Li Xuehong, “Continued Education Gives Rise to Greater Room for Development and Stronger Development Potential for Second Artillery,” *Zhongguo qingnian bao*, 25 November 2001.

the college students it has recruited, 89 percent of them are reported to have a four-year college degree.<sup>392</sup>

**Orientation.** Managing the in-processing and basic training of relatively high numbers of civilian college graduates has also been an area ripe for Second Artillery's innovation. Second Artillery is reported to have invested more than 10 million RMB (more than USD 1.2 million) to establish two training camps where these recruits can receive "pre-job" training.<sup>393</sup> Each of these two training camps has established a weaponry lab, an electronic survey lab, a special environment lab, an engineering protection lab, and a simulation lab. These new officers are also given opportunities to train in military institutions, study in industrial plants, and participate in major military maneuvers and missile launches.<sup>394</sup> Upon completion of these programs, they can go on to a variety of jobs. It should be noted that, in a break from past practices, there have been reports that at least some of these civilian college graduates are being assigned to operational positions at the company level.<sup>395</sup>

### Creating an NCO Corps

One noteworthy benchmark of the PLA's march to higher levels of professional competence is its decision to create an enlarged professional corps of noncommissioned officers. The PLA has articulated an overarching goal of increasing the number of noncommissioned officers while reducing the total number of conscripts. China revised its *Military Service Law* in December 1998; the PLA subsequently revised its *Regulations on Military Service of Active-Duty Soldiers* in July 1999. Together these documents put into motion the creation of an enlarged professional corps of NCOs.<sup>396</sup> This NCO Corps was designed, in part, to provide a more professional and stable backbone enlisted force to replace a shrinking conscription force (discussed below).

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<sup>392</sup> Wu Xudong and Zhang Xuanjie, "About 20 Percent of Officers Serving in China's Strategic Missile Units Come from Colleges and Universities Across the Country," *Xinhua*, 29 April 2002.

<sup>393</sup> Ibid.

<sup>394</sup> Ibid.

<sup>395</sup> "According to statistics, of the military officers Second Artillery has recruited from local institutions of higher learning in recent years, several hundred have taken up the post of principal operational company officers. . . ." Chen Xiping and Zhang Xuanjie, "Strategic Missile Units Attract Large Numbers of Local University Students" *Xinhua*, 26 November 2001.

<sup>396</sup> As with many personnel reforms, the creation of a PLA NCO corps had been attempted before. The decision to adopt a system of noncommissioned officers was made by the Central Military Commission in 1978. Prior to the promulgation of these two documents, the PLA had an NCO corps, but it was limited both in terms of numbers and in terms of types of duties performed. "Major Reform in Our Army's Service System—Yang Zhiqi, Director of the Military Affairs Department of the General Staff Headquarters Answers Reporters' Questions on Military Service Regulations," *Jiefangjun bao*, 13 July 1999 (FBIS).

There is little evidence that the challenges Second Artillery experienced as a result of this restructuring of their enlisted corps were more severe than those experienced by the PLA as a whole. However, there have been reports that the primary institute for the training of Second Artillery NCOs, Qingzhou Noncommissioned Officers Academy in Shandong Province, was, at least initially not providing NCOs with useful and appropriate training. Units are reported to have complained that the NCOs were being given too much theory and not receiving enough practical instruction. “They (the new NCO graduates) were only versed in lecturing theories, but not capable of operating equipment.”<sup>397</sup> The Academy has since reported a change in curriculum.

Another challenge Second Artillery appears to be struggling with in regards to NCOs is the difficulty of shortening the orientation period for new NCOs once they have joined their units. The Second Artillery’s Qingzhou NCO Academy is reported to be currently involved in revising its curriculum to allow more time for training for an NCOs post-graduation assignment and to allow for some preparation for field conditions. The objective of this revised training is to complete the orientation process at the Academy, so that new NCOs will be fully prepared for duty when they report for their new positions.<sup>398</sup>

### **Enlisted Conscription**

Accompanying changes in officer accession policies and the creation of an enlarged NCO Corps, recent PLA personnel reforms have also affected the conscript force. The most significant of which is a change in the length of mandatory service, which was codified in the 1998 *Service Law* and the 1999 *Regulations on Active-Duty* noted above.

Previously, the length of mandatory service for soldiers in the ground forces was three years, and for those assigned to the Navy and Air Force—the PLA’s technical services—was four years.<sup>399</sup> However, pursuant to the promulgation of these new policies, the length of mandatory service for conscripts in all services and branches is now two years.

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<sup>397</sup> Gao Qiang, and Zhou Guojun, “The Qingzhou Noncommissioned Officer Academy of the PLA Second Artillery Enhances the Teaching of Special Skills,” *Jiefangjun bao*, 26 August 2002. It is not clear at what point in their career soldiers attend the NCO Academy. It could be immediately after they complete their two-year conscription period, or it could be later in their NCO career. Since 1999, the PLA’s NCOs can serve for a total of 30 years, which is divided into six periods of 3, 3, 4, 4, 5, and 9 years. Although the system is present on paper and in the new regulations, it will take several years to completely transition from the old system.

<sup>398</sup> *Ibid.*

<sup>399</sup> It seems logical to surmise that, prior to the change, the mandatory service period for Second Artillery conscripts would have been 4 years—the same as it was for the two technical services (Navy and Air Force). However, the authors cannot find this stated in any published reports. Either a 3 or 4-year conscription period would have been possible. Regardless, the period of mandatory service is now the same throughout the PLA.

There is little in the way of official PLA explanation for this seemingly counterproductive change. Anecdotal evidence suggests that the change was in response to domestic political pressures. Specifically, some suggest that because of the state's "one child policy" (which was instituted in 1982) and the breakdown of the centralized social safety net (a result of a more free market economy), many rural families were resisting the requirement to give up an only son to military service for more than two years. If true, this is a telling explanation. What is clear, however, is that a change in the term of service had a potentially significant impact on the PLA's ability to retain expertise.

By curtailing and standardizing the period of compulsory service from three or four years to two years throughout all services and branches, and eliminating the option of voluntarily extending the period of enlisted service, the 1998 *Military Service Law* radically altered the PLA recruitment and retention plans for enlisted personnel and created a short-term experience gap.

The exact effect this development will have on Second Artillery is difficult to determine. At first glance, Second Artillery appears to have a smaller proportion of conscripts within its ranks than the PLA as a whole.<sup>400</sup> However, the challenge posed by a 50-percent annual attrition rate among conscripts is one Second Artillery will face for as long as it maintains the two-year conscription period. Therefore, the mechanisms it develops to cope with this challenge in the coming years are worthy of some observation. Conscripts appear to be on a path of decreasing responsibility and professionalism, with NCOs taking on a new and more significant role. For this reason, progress in recruiting and retaining NCOs is a critical measure of Second Artillery's progress in developing a more professionalized force. When examining its progress, one must look at not only its success in meeting its initial recruitment goals, but also its NCO retention rates and changes in the average number of years experience.

## DEVELOPING TALENT

As in the PLA as a whole, Second Artillery is coming to terms with new challenges for retaining talented individuals. Like the militaries in many countries undergoing a period of rapid economic growth, the PLA faces competition from its own private sector to recruit and retain the most talented personnel. As the most high-tech arm of the PLA, Second Artillery has in many ways been forced to take the lead in developing innovative means of retaining talented officers.

In an attempt to address this issue, in early 2000, the PLA released its "10<sup>th</sup> Five-Year Plan for the Development of Talented People" that included specific goals for Second Artillery.<sup>401</sup> According to reports, this plan identified 30 specific measures for improving the way in which Second Artillery develops its talented personnel and realize its goal of "developing a large number competent and talented commanders, expert

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<sup>400</sup> Data derived from Periscope Country Report on China, <<http://www.periscope.ucg.com/nations/asia/china/organzn/index.html>>.

<sup>401</sup> Dong Jushan, and Wu Xudong, "Second Artillery to Have More Than 300 experts at State and Armed Forces Levels in 10<sup>th</sup> Five-Year Plan," *Jiefangjun bao*, 20 August 2000.

technical personnel, think-tank staff officers, and modern managers.”<sup>402</sup> These measures are broad sweeping and range from improving the ideological and political quality of talented personnel to improving the management and structure of training and development.

### **Professional Military Education**

In order to successfully prosecute the types of campaigns described in PLA doctrinal writings, Second Artillery must ensure that it is developing officers with an appropriate range of educational experiences. For Second Artillery, this has translated into ensuring that there is enough current and specialized expertise to use advanced equipment, operate under difficult conditions, and coordinate with other entities both within Second Artillery and with the PLA as a whole.

**Enabling Integrated Operations: Career Broadening.** As has been demonstrated in PLA doctrinal writings on Second Artillery campaigns, the PLA sees an ability to establish and maintain close coordination essential to successfully instituting its operational doctrine for Second Artillery campaigns. Second Artillery recognized that its current method of officer training was not developing the type of soldier it needed to prosecute the types of campaigns Second Artillery would be called upon to wage. Second Artillery also acknowledges that it could sustain severe combat losses during a conflict, so its troops must be prepared to perform multiple tasks. As a result, we have seen reports of changes to some of the most basic assumptions behind professional military education (PME) within Second Artillery.

The 2<sup>nd</sup> Artillery Engineering Academy (*erpao gongcheng xueyuan*; 二炮工程学院) is Second Artillery’s basic training academy (*erpao chuji peixun yuanxiao*; 二炮初级培训院校). During the course of an officer’s study, command training and technical training are integrated. All students must become proficient in basic military and technical issues before going on to specialized training. Although little can be said about their progress in this area, it is reported that one goal of this training is to ensure that upon completion of this program, all participants would be prepared to work both as military commanders and as engineers, and that all would possess a solid foundation that would allow them to more quickly master the various high-tech equipment they would encounter.<sup>403</sup>

The Second Artillery Command Academy (*erpao zhihui xueyuan*; 二炮指挥学院) is the main academy responsible for intermediate training for officers in Second Artillery. This academy is reported to have undergone a dramatic shift in its training procedures and policies in recent years. According to one article, prior to 1997, the Second Artillery Command Academy followed a training model in which separate and specialized training was offered to officers for military work, political work, logistics, equipment, etc. As a

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<sup>402</sup> Ibid.

<sup>403</sup> Li Xuehong, “Continued Education Gives Rise to Greater Room for Development and Stronger Development Potential for Second Artillery,” *Zhongguo qingnian bao*, 25 November 2001.

result, each group of officers did not understand the intricacies of the other group's work.<sup>404</sup> An expression was used to describe this situation: "You don't understand my work's special characteristics and I don't understand the nature of your work" (*ni bu liaojie wode gongzuo tedian, wo ye bu liaojie nide gongzuo xingzhi*; 你不了解我的工作特点, 我也不了解你的工作性质). Such a situation was seen to be unsuitable for tasks that require a high degree of cooperation. As one officer stated:

While scientific research becomes more specialized, there is an increasing demand for coordinated actions in future wars. Therefore, simply separating the training of talents into technical and command training is unscientific and unsuitable in view of the integrated demands of future wars.<sup>405</sup>

To combat this problem, the Second Artillery Command Academy adopted a new approach to training known as "combine, separate, combine" (*he fen he*; 合分合). According to this article, under this new training regime, all officers receiving intermediate-level training at the academy, including those specializing in military issues, political works, logistics, equipment, etc., will combine and spend the first six months of a one year training program as an integrated group. During this time, all officers receive training on topics such as missile weaponry, political work, equipment management, and logistic support. During the second phase, also lasting six months, officers will separate into groups and receive specialized training in their specific areas of expertise. Upon graduation from the course, the officers will go back to work in their specialized fields and combine the knowledge they have received in order to more efficiently conduct integrated exercises.<sup>406</sup>

**Maintaining Current Expertise, the Rise of Continuing Education.** Second Artillery is also challenged by the rapid pace at which highly technical knowledge and training can become obsolete. For this reason, continuing education has become more of a priority within Second Artillery. In an effort to address this need, Second Artillery has created a special fund to be used to develop talents and provide special training at all levels of service. The current level of funding for this initiative, however, 4 million RMB

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<sup>404</sup> Ibid.

<sup>405</sup> Ibid.

<sup>406</sup> There also appears to be a direct relationship between Second Artillery and the Langfang Army Missile Academy (*Langfang lujun daodan xueyuan*; 廊坊陆军导弹学院). The academy, which was established as a training regiment in 1978, trains the ground force's antitank missile troops, surface-to-air missile troops, and *fendui*-level officers in campaign and tactical surface-to-surface missile command. The officers train for three to four years before they are assigned to battalion-level and below ballistic missile units as commanders, technical officers, and political instructors. A review of *Jiefangjun bao* articles indicates that missile officers can move back and forth between the academy, the Nanjing MR's new missile units, and Second Artillery.

(approximately USD 500,000) each year, may not be up to the task of maintaining technical currency throughout this elite corps.<sup>407</sup>

Another Second Artillery initiative to promote continuing education was the establishment of a continuing education department (*jixu jiaoyu xi*; 继续教育系) in Second Artillery's Engineering Academy in 1999. It is reported to be the first such facility set up in any Chinese military academy. At this facility, the faculty conducts courses for commanders of missile battalions and companies, members of the headquarters staff, and engineers. It is also reported to hold ad hoc courses for senior engineers in order to help keep them abreast in the latest technologies and scientific breakthroughs.<sup>408</sup>

**New Techniques and Approaches.** Second Artillery has taken some interesting steps at experimenting with education and training techniques. For example, in addition to numerous reports about the introduction of computer technology and multimedia training techniques that come up when looking at any branch of the PLA, for Second Artillery, areas such as political education have been the grounds for innovation. A November 2001 report describes one brigade's attempts to rationalize political education by taking a multi-layer approach.<sup>409</sup> According to this report, the brigade was experimenting with the concept of designing a political education plan in which people of different ranks and levels of responsibility were given different types of lessons. Under this new plan, rather than continuing with the existing practice of gathering the entire brigade to receive the same training, political education would be designed for four different target groups: (1) leaders and government officials, (2) front-line officers (regiment and below) and grade 2 or higher NCOs, (3) grade 1 NCOs, and (4) conscripts. Some might suggest that the very fact that this seemingly useful and innocuous innovation is still an experimental policy tells more about the PLA's past approaches toward training than their current willingness to change, but it is, nonetheless, an indication of a willingness to break away from the past and seek new solutions.

The same report also listed a new approach to managing political instructors. According to this experimental plan, political instructors would compete for the honor of teaching a class. Several political instructors would be given a topic and tasked to come up with lesson plans. The instructors would then each teach a sample class to a review committee. The best instructor would then be chosen to teach the course throughout the brigade.<sup>410</sup>

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<sup>407</sup> Dong Jushan, and Wu Xudong, "Second Artillery to Have More Than 300 experts at State and Armed Forces Levels in 10<sup>th</sup> Five-Year Plan," *Jiefangjun bao*, 20 August 2000.

<sup>408</sup> Li Xuehong, "Continued Education Gives Rise to Greater Room for Development and Stronger Development Potential for Second Artillery," *Zhongguo qingnian bao*, 25 November 2001.

<sup>409</sup> Wang Cai and Bi Yongjun, "Second Artillery Brigade Explores New Multi-layers Approach to Political Education" *Jiefangjun bao*, 4 November 2001 (FBIS).

<sup>410</sup> Ibid.

### **Modernizing Human Resource Management: Retaining and Evaluating Talent**

Perhaps more than other branches of the PLA, China's decade-long economic boom has created special challenges for the high-tech Second Artillery. When faced with competition from higher-paying private sector companies, it is simply more difficult to attract and retain the expertise that Second Artillery requires. One of the primary ways it has addressed this is by providing material incentives for what one can surmise must be the most elusive groups: civilian college graduates, scientific and technical officers, and military academy and research institute faculty. At the same time, as the officer corps diversifies and faces new tasks and challenges, Second Artillery must ensure that the methods it uses to evaluate and promote its personnel meet its current and future needs.

**Preferential Treatment.** Second Artillery has policies in place to encourage students with higher education to join and remain in Second Artillery, including material benefits such as preferential working conditions and remuneration.<sup>411</sup> The motto often associated with such programs is “respect for knowledge and regard for talent.”

Second Artillery also appears to be making special efforts to increase opportunities for career development within their military academies and research institutes. For example, the Second Artillery Engineering Academy is said to have implemented a policy of the “four priorities” to attract and retain the interest of young scientists. According to this policy, young scientists are encouraged to remain in Second Artillery and become involved with teaching by being offered preferential treatment in four areas: (1) priority selection for going on for further study, (2) priority selection for overseas visits and participation in academic exchanges, (3) priority in the organization of research projects in and teaching of their main research interests and areas of expertise, and (4) priority consideration for promotions, meritorious service awards, etc.<sup>412</sup>

Another Second Artillery research institute is engaged in a similar program to attract and retain scientific and technical officers. To do this, they have instituted a policy known as the “six priorities” for dealing with scientific and technical cadres: (1) giving preferential treatment with regards to the allocation of their office facilities; (2) housing arrangements; (3) guaranteeing their use of cars; (4) granting them special consideration for awards; (5) giving them priority consideration for promotions to a new post or a higher grade; and (6) providing special procedures for examining and approving their work.

**Evaluation and Career Development.** Second Artillery appears to have given some thought to items other than material compensation that would entice young talent not only to join, but also to remain and develop within the PLA. In particular, Second Artillery has begun to give greater attention to the concept of career development. Young

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<sup>411</sup> “PRC Strategic Missile Forces Enlisting More College Graduates,” *Xinhua*, 29 November 2001. Also see: Chen Xiping and Zhang Xuanji, “Large Number of University Students Attracted to Join Strategic Missiles Unit – Student Cadres, All-Round Students, Party (Cadet) Members and Students with Special Skills Make Up 96 Percent of Recruit,” *Renmin ribao*, 29 November 2001.

<sup>412</sup> Liu Mingsong and Zhao Fengyu, “Engineering Institute of Second Artillery Devotes Efforts to Foster Scientific and Technological Leaders,” *Jiefangjun bao*, 4 October 2002.

officers are reportedly given more opportunities to receive advanced training early in their careers. This is said to often entail giving civilian college graduates an opportunity for some amount of further college training within the first three years of their careers.<sup>413</sup>

In a move to address concerns about career development, and to ensure that the military leaders of the future rise through the ranks, Second Artillery is moving toward a more open and objective process of assessing and evaluating the performance of its officers. In recent years, the PLA as a whole has made efforts to standardize and make more objective and transparent its process of evaluating and promoting officers. These subjects have been addressed in the December 2000 *Active-Service Officers Law* and the January 2002 *Regulations on the Appointment and Removal of Military Officers on Active Service*.<sup>414</sup> Among other things, these laws have encouraged a standardization of the officer evaluation process and allowed for new avenues of feedback, such as opinion polls among an officer's peers. Unit Party Committees have actually been instructed not to promote officers who are disliked or disapproved of among "the masses,"<sup>415</sup> and, although political reliability is still a factor in officer evaluation, other criteria are also listed as being relevant.<sup>416</sup>

Second Artillery is also making special efforts to reform the academy instructor evaluation system. For example, the Engineering Academy claims to have done away with the more traditional seniority-based promotion system. Instead, they are reported to have laid out new criteria for evaluating instructors and selecting professors based on scientific achievements. Without a more thorough understanding of past promotion rates, it is difficult to gauge the pace of this reform. Since 2000, the academy is reported to

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<sup>413</sup> Li Xuehong, "Continued Education Gives Rise to Greater Room for Development and Stronger Development Potential for Second Artillery," *Zhongguo qingnian bao*, 25 November 2001.

<sup>414</sup> In some reports, the *Active-Service Officers Law* is listed as decreed in January 2001 rather than December 2000. For a detailed discussion of this law and all of its ramifications, see an exceptionally dense and granular article issued by the PLA General Political Department. "Explanations on the *Active-Service Officers Law of the People's Republic of China*," *Jiefangjun bao*, 18 January 2001 (FBIS). For information on the Regulations on the Appointment and Removal of Military Officers on Active Service, see "CMC Chairman Jiang Zemin Signs Decree on Promulgation of *Regulations on Appointments and Removals of Military Officers on Active Service*," *Jiefangjun bao*, 14 January 2002 (FBIS); and "Leader of Cadres Department under the PLA General Political Department Answers This Reporter's Questions on Regulations on the Appointment and Removal of Military Officers," *Jiefangjun bao*, 1 February 2002 (FBIS).

<sup>415</sup> "CMC Chairman Jiang Zemin Signs Decree on Promulgation of Regulations on Appointments and Removals of Military Officers on Active Service," *Jiefangjun bao*, 14 January 2002 (FBIS).

<sup>416</sup> In the 2000 *Active-Service Officers Law*, "loyalty to the Communist Party" and "having firmly held revolutionary ideals" are requirements for all officers. "Explanations on the *Active-Service Officers Law of the People's Republic of China*," *Jiefangjun bao*, 18 January 2001 (FBIS).

have broken with tradition and selected younger scientists with less seniority as professors eight times.<sup>417</sup>

Interestingly, according to some reports, one purpose for this effort is to improve the PLA's ability to manage what they see as inevitable personnel shortages during times of crisis, or to better their ability to "pick the taller from among the short people" when the situation demands it.<sup>418</sup> Given their assumption of high casualties resulting from any attack on its missile force, this idea could have special relevance for Second Artillery.

In a broad-based effort to improve its assessment and evaluation procedures, Second Artillery is reported to have initiated a series of studies on how to better manage and assess its scientific and technical officers.<sup>419</sup> After two and a half years of study and discussion, in early March 2002, Second Artillery is reported to have issued its *Criteria for the Quality Assessment of Scientific and Technical Cadres in Conventional Missile Brigades*. The purpose of issuing the *Criteria* was to standardize the methods by which Second Artillery scientists, engineers, and technical officers are evaluated. The *Criteria* identifies specific areas of competency and force evaluators to give a quantifiable measure (a number grade) of each officer's performance in each of the specified areas. These areas cover several broad categories, including: political quality, professional expertise, and management capability.<sup>420</sup>

As with many PLA personnel innovations, what is most remarkable about this system is that it is reported to be an innovation, a new policy introduced for the first time in March 2002! It does appear however, that the *Criteria* themselves are not the sole product of two and a half years of careful study and investigation. They are described to be the first of several steps away from a system of "rough estimate" and toward a more modern Second Artillery approach to human resource management. If this is true, in upcoming years, we should see the implementation of other policies and procedures that might address some of the other human resource management challenges that Second Artillery has identified, such as a disproportionate distribution of expertise in certain scientific fields and an overall shortage of "high-level" experts.<sup>421</sup>

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<sup>417</sup> Liu Mingsong and Zhao Fengyu, "Engineering Institute of Second Artillery Devotes Efforts to Foster Scientific and Technological Leaders," *Jiefangjun bao*, 4 October 2002.

<sup>418</sup> Wang Jinxiang, "Carry Out Personnel Training According to the Line of Thought Advocating Leaping--To Achieve Leaping in Armed Force Construction, It Is Necessary to Achieve Leaping in Personnel. Break Away from the Gradualist Mode of Personnel Training and Discard the Approach of Following Established Practices, on the Basis of Focusing on the General Trend in Military Revolution of the World and Seizing the Favorable Historical Opportunity," *Jiefangjun bao*, 29 May 2001 (FBIS).

<sup>419</sup> The PLA uses officer and cadre interchangeably, especially since there was no rank system before 1955 and between 1965 to 1988.

<sup>420</sup> Li Guangrong and Bi Yongjun. "Second Artillery Issues Criteria for the Quality Assessment of Its Scientific and Technological Cadres," *Jiefangjun bao*, 18 March 2002 (FBIS).

<sup>421</sup> Ibid.

**New Areas of Study.** One striking element in doctrinal writings on Second Artillery campaign operations is the ready acceptance of the fact that, in the event of an actual conflict, these units would be asked to perform their duties in just about the worst environment imaginable. Although there are no real solutions to that problem, Second Artillery does appear to be giving some amount of consideration to the mental and emotional strain this will place on personnel. Reports of psychological studies and the use of psychological evaluations are becoming more prevalent. One example is an article appearing in *Jiefangjun Bao* in August 2002 in which a missile brigade was experimenting with the use of psychological evaluations to determine the combat readiness of individual personnel—especially technical personnel and “key hands” (*zhongyao haoshou*; 重要好手). According to this article, the brigade set up psychological assessment files for all of its technical personnel and “key hands.” An assessment was made every quarter and just prior to the execution of any important launch mission. If an individual was found to be in a less than ideal psychological state, the person was replaced.<sup>422</sup>

## **SECOND ARTILLERY FOREIGN RELATIONS: A TOOL FOR RETENTION AND EDUCATION**

One under-studied tool that Second Artillery may use to address retention issues and to improve the overall professional education of its force is its foreign relations program. It can be used both to entice young officers to remain in Second Artillery and to expand the educational experiences of the Second Artillery’s rising stars by exposing them to other militaries and introducing them to new approaches to common challenges.

Since reform began in 1978, senior PLA officers have led over 1,600 delegations to more than 80 countries (See Appendix C).<sup>423</sup> Each of the senior PLA leaders in the CMC have averaged one trip abroad per year. When they travel, their delegations usually include senior members of the different services and military regions, including deputy commanders, deputy political commissars, and chiefs of staffs.<sup>424</sup> In addition, the Navy and Air Force commanders and political commissars, deputy chiefs of the general staff, and military region commanders have averaged one trip abroad per year. Where does Second Artillery fit into this program?

It was not until the mid-1990s that Second Artillery’s commander and political commissar became active participants in the PLA’s foreign relations program (See Appendix D for leadership biographies). Unlike the PLAN and PLAAF commanders and

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<sup>422</sup> Wang Xiaojun and Xia Hongqing, “Second Artillery Brigade Brings Psychological Evaluation into Sphere of Training,” *Jiefangjun bao*, 21 August 2002 (FBIS).

<sup>423</sup> Huang Cailong, “Moving Toward the World and Peace: Roundup of Five Decades of PLA Foreign Military Interaction,” *Xinhua*, 14 September 1999 (FBIS: FTS19991005000721); “China’s Military Diplomacy Forging New Ties,” *Xinhua*, 28 October 2002; Kenneth W. Allen and Eric A. McVadon, *China’s Foreign Military Relations*, The Henry L. Stimson Center, October 1999.

<sup>424</sup> A typical delegation consists of 7-10 members.

political commissars, Second Artillery's leaders have hardly traveled abroad. Yang Guoliang, who was the commander from 1992 to 2003, became the first commander to travel abroad when he accompanied Defense Minister Chi Haotian to France, Spain, Portugal, and Finland in September 1995.<sup>425</sup> In November 1996, Yang led a Second Artillery Delegation to Saudi Arabia, and in August 2000, he led another delegation to Russia and Finland.<sup>426</sup>

Second Artillery's political commissars visited abroad in 1996, 1998, and 2000 as members of senior PLA officer-led delegations. In May 1996, Sui Yongju accompanied Defense Minister Chi Haotian to Egypt, the United Arab Emirates, Saudi Arabia, and Kuwait.<sup>427</sup> In May 1998, Sui Mingtai accompanied Yu Yongbo, Director of the General Political Department, to Cuba and Mexico.<sup>428</sup> In January 2000, Sui Mingtai was a member of Chi Haotian's delegation to South Korea, Russia, Britain, and Mongolia.<sup>429</sup> So far, no political commissars have apparently led delegations abroad.

Three Second Artillery deputy commanders have been members of senior PLA member delegations. In August 1991, Qian Gui accompanied Chi Haotian, who was then chief of the general staff, to Russia.<sup>430</sup> In December 1996, Zhao Xijun was a member of Defense Minister Chi Haotian's delegation to the United States.<sup>431</sup> Zhao also traveled

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<sup>425</sup> "Chi Haotian Arrives in Spain for Visit," *Xinhua*, 7 September 1995 (FBIS FTS19950907000501); "Chinese Defense Minister Visits Finland," *Xinhua*, 15 September 1995.

<sup>426</sup> "Saudi Arabia, China Discuss Military Cooperation," *Agence France Presse*, 27 November 1996; "PLA Delegation Leaves for Russia, Finland," *Xinhua*, 10 August 2000; "Defence Minister Receives Commander Of Chinese Strategic Missile Forces," *BBC*, 28 November 1996 (from SPA news agency, Riyadh, in Arabic, 26 November 1996). Beside LTG Sui, the only other senior PLA officer reported in the entourage was Deputy Chief of the General Staff LTG Xiong Guangkai.

<sup>427</sup> "Chinese Defense Minister Chi Leaves for Middle East," *Kyodo News Service*, 25 May 1996.

<sup>428</sup> "PLA Political Director Returns From Cuba, Mexico," *Xinhua*, 18 May 1998. Besides Sui, Yu's entourage included Lieutenant General Zheng Shenxia, Commander of the Shenyang Military Region Air Force and concurrently Shenyang Military Region Deputy Commander.

<sup>429</sup> "Chinese Military Delegation Anxious Not To 'Provoke' North," *BBC*, 24 January 2000 (from *Yonhap News Agency*, Seoul, in English, 21 January 2000). Besides Sui, other member of the delegation included Major General Zang Wenqing, Beijing Military Region Deputy Commander; Major General Luo Bin, Director of the Foreign Affairs Office of the Defence Ministry; and Major General Wang Jianmin, Chief of Staff of the Shenyang Military Region.

<sup>430</sup> "PLA Chief of General Staff Makes Historic Soviet Visit," *Xinhua*, 5 August 1991. Besides Qian, other members of the delegation included Lieutenant General Wang Chengbin, Commander of the Beijing Military Region; Vice Admiral Wei Jinshan, Political Commissar of the Navy; and Senior Colonel Luo Bin, Deputy Director of the Foreign Affairs Bureau of the Defense Ministry.

<sup>431</sup> Yang Guojun and Wang Xiaodong, "Chi Haotian Leaves for U.S. on 10-Day Official Visit," *Xinhua*, 2 December 1996. Besides Zhao, other member of the delegation included Lieutenant General Xiong Guang Kai, Deputy Chief of the General Staff; Lieutenant General Liu Shun Yao, Air Force Commander; Lieutenant General Tao Bojun, Guangzhou Military Region Commander; Lieutenant General Wang Tailan,

with CMC Vice-Chairman Zhang Wannian to Spain, Italy, and Portugal in May 2000.<sup>432</sup> In April 2000, Huang Cisheng accompanied Chief of the General Staff Fu Quanyou to Japan, Nepal, and Germany.<sup>433</sup>

It is important to note, however, that much of what Second Artillery does in terms of its foreign relations, especially its functional exchanges, is hidden from outside view. For example, a 1996 *Xinhua* report stated, “Second Artillery has arranged for nearly 1000 experts, scholars, and promising science and technology personnel to study abroad, to visit foreign countries, to engage in advanced studies abroad and to participate in international academic activities, in order to keep track of the world’s newest technology of the current time.”<sup>434</sup> Unfortunately, there is virtually no reporting on these activities. A good example is the lack of reporting by *Xinhua* and *Jiefangjun Bao* on commander Yang Guoliang’s visit noted above to Saudi Arabia in November 1996. Available information on Yang’s visit came from the *British Broadcasting Corporation’s* translation of Saudi Arabia’s *SPA News Agency* reporting in Arabic.

Based on the information available, no discernible pattern appears to exist for visits to specific countries other than to Russia to discuss possible acquisition of weapon systems and technology and to Saudi Arabia concerning the Saudi’s 1988 acquisition of 30-35 DF-3/CSS-2 SRBMs.<sup>435</sup>

Although it is difficult to draw any generalizations from so little data, Second Artillery’s officer participation as members of senior PLA delegations abroad meets the PLA’s requirement of “having China’s military leaders and younger officers acquire modern military knowledge, especially from the developed world, in doctrine, operations,

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General Logistics Department Deputy Director; Lieutenant General He Pengfei, Navy Deputy Commander; and Major General Zhan Maohai, Defense Ministry Foreign Affairs Office Deputy Director.

<sup>432</sup> “China’s Zhang Wannian Leaves for European Tour,” *Xinhua*, 23 May 2000. In addition to Zhao, Zhang’s entourage included Lieutenant General Xiong Guangkai, Deputy Chief of General Staff; Lieutenant General Tao Bojun, Commander of Guangzhou Military Region; Lieutenant General Wang Liangwang, Air Force Deputy Commander; Vice Admiral Zhang Dingfa, Commander of the North Sea Fleet and concurrently Deputy Commander of Jinan Military Region.

<sup>433</sup> “Chinese Army Chief Fu Quanyou Arrives,” *BBC*, 8 April 2000 (from *Xinhua*, 6 April 2000). Other members on the entourage included Vice Admiral Shen Binyi, Deputy Commander of the Navy; Lieutenant General Guo Yuxiang, Commander of the Jinan Military Region Air Force and concurrently Deputy Commander of the Jinan Military Region; and Major General Zhan Maohai, Deputy Director of the Foreign Affairs Office of the Ministry of National Defence.

<sup>434</sup> “Strategic missile units hone technological skills,” *BBC* (from *Xinhua*, in Chinese, 9 December 1996).

<sup>435</sup> For the origins of the DF-3 sale see Lu Ning, *The Dynamics of Foreign-Policy Decision-making in China*, Boulder, CO: Westview Press, 1997, p. 113-117; John W. Lewis, Hua Di, and Xue Litai, “Beijing’s Defense Establishment: Solving the Arms-Export Enigma,” *International Security*, Spring 1991. In October 2000, Saudi Defense Minister Prince Sultan Bin Abd-al-Aziz visited China as a guest of Minister of Defense Chi Haotian. “Saudi Defence Minister Says No New Military Deals With China,” *BBC*, 14 October 2000 (from *SPA News Agency*, 12 October 2000).

training, military medicine, administration, and a host of non-combat related areas.”<sup>436</sup> Based on discussions with PLA officials, these visits help expose the PLA officers throughout the chain of command to foreign militaries, in hopes they will develop a perspective of warfare that is broader than they read in PLA journals. Most of these PLA officers have never traveled abroad or even traveled extensively within China. Second, these visits are used to help groom certain officers for future positions. Third, it makes it easier for the general departments to implement reforms when senior officers within the various general department, service, and military region headquarters have had firsthand experience that allows them to see changes in the PLA as necessary.

## **TRAINING REFORMS**

One of the great challenges for Second Artillery to enable its new operational concepts is maintaining a sufficiently trained force that can adapt to changes brought about by new technologies and ongoing reforms and modernization. Second Artillery has made several reforms in this area, including improving the process by which it introduces new technologies, improving the way in which it utilizes technology in training methods, and revising its training cycle to allow for more time to be spent on advanced training.

## **NEW APPROACHES TO INTRODUCING NEW TECHNOLOGIES**

Over the past decade, Second Artillery has added several mobile nuclear and conventional brigades equipped with new or modified missiles to its arsenal. During the early 1990s, it took about two to three years from the time a brigade received its new missiles until it was prepared to launch the first test missile.<sup>437</sup> As more brigades were established, however, Second Artillery established procedures to reduce this time frame for new and modified missiles. These procedures were issued as the “Second Artillery Training Plan” in late 1999 and were apparently a major focus of Second Artillery’s annual training conference in November 1999.<sup>438</sup>

Based on a review of Chinese source material on Second Artillery, it appears that many of these procedures have been devised by individual units, blessed by higher authorities, and then passed on to other units, possibly during the annual Second Artillery training conference held in November. For example, after three years of studying combat methods and principles of strategic missile units with emphasis on technical and tactical issues, one Second Artillery base introduced significant military training reforms that

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<sup>436</sup> Interviews with PLA officials.

<sup>437</sup> “Second Artillery Quickens Combat Power Generation,” *Jiefangjun bao*, 27 August 1999.

<sup>438</sup> “Brigade Starts Training with New Subjects,” *Jiefangjun bao*, 9 January 2000. The “Zhongguo renmin jiefangjun dier paobing xunlian dagang” [Second artillery training plan] has been referenced in various PLA publications and National Defense University dissertations, but no specifics have been given.

were approved at the November 1995 Second Artillery Training Work Conference.<sup>439</sup> The base's study resulted in a large number of new tactical training methods for Second Artillery as a whole.

When the first mobile brigades were created, the units waited until they received their new missiles before they began training. This process was reported to have changed during the late 1990s as the operational brigades organized three separate groups to begin training well before the missiles arrived. One group became involved in the entire process of weapon's development, testing, design finalization, and production.<sup>440</sup> Under the new procedures, while the new weapon is at the design and development stage, a small number of cadre are sent to the factory and research institute to learn the design and the structural and operating theory. During the testing stage, testing and training teams are sent to the test grounds to watch, study, collect and process data, and learn to operate and service the new equipment. At the stage of design finalization, the unit forms a complete operating group to learn its operation. A second group deployed to another unit that already had the new type of missile and trained with them.<sup>441</sup> A third group deployed to test launch sites to learn launch skills. Using the new training procedures, brigades are able to launch their first missiles in about one year instead of three. After employing this training method, one unit was described as being capable of launching a missile within a year of receiving the missile, becoming a "fist unit" in the second year, and being fully combat effective in the third year.

## USING TECHNOLOGY TO IMPROVE TRAINING METHODS

One of the key factors that has allowed Second Artillery to upgrade its training and operational readiness is its digital microwave communications system, which was the first such system to be established in the PLA.<sup>442</sup> As a result of communications upgrades, Second Artillery bases and brigades have increased their use of computers to conduct individual and unit training. Various bases have equipped their subordinate units with modern missile launch simulators, equipment simulators, training laboratories, multi-function training fields, and simulated opposition force training centers.<sup>443</sup> One unit invested more than one million RMB (USD 125,000) in computers, multimedia, and

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<sup>439</sup> Zhang Jiajun and Liu Shengdong, "Tactical Study Promotes Training Methods Reform--Second Artillery Base Military Training Enters Benign Circle after Three Years of Hard Work," *Jiefangjun bao*, 10 December 1995.

<sup>440</sup> "Second Artillery Quickens Combat Power Generation," *Jiefangjun bao*, 27 August 2000.

<sup>441</sup> "New-Type Guided Missile Launched By Newly-Formed Brigade," *Huojian bao*, 7 June 2001.

<sup>442</sup> "New Digital Communications Network In Full Operation," *Jiefangjun bao*, 8 September 1999.

<sup>443</sup> "Brigade Explores S&T Troop Training," *Jiefangjun bao*, 15 November 1999. *Jiefangjun bao*, 13 September 2000.

other high-tech equipment.<sup>444</sup> While focusing on its campaign and tactical command training simulation system and network construction, the unit developed 200 multimedia software systems covering theory, equipment operation, common training subjects, and integrated support. Overall, the computers have cut down the training time for some jobs by 25-60 percent. Some training items that previously required operation of real equipment can now be mastered in the barracks.

### REVISED TRAINING CYCLE

In the past, Second Artillery moved from basic technical training at home during the winter to progressively more difficult mobile tactical training in the fall. This one-year cycle was based on the annual conscription period of 1 November through 31 October. Even though the conscription period was reduced to only two years in 1999, it appears Second Artillery has adjusted its training cycle, making it possible for advanced training to begin earlier and be conducted year round. For example, according to *Jiefangjun Bao*, one particular brigade conducts an emergency deployment exercise against a tactical background about once a month.<sup>445</sup> In addition, Second Artillery communications regiments are said to routinely train for emergency mobile support by testing their microwave, carrier wave, optical terminal, satellite, and program-controlled equipment during different weather conditions.<sup>446</sup>

Generally, battalion training begins with a single piece of equipment and single training subject during the first couple months of training, which also coincides with the winter months.<sup>447</sup> Following Spring Festival, which usually occurs in February, battalions and brigades move to combined arms training with all equipment. The training also progresses from fixed position to mobile position training, and from daytime training to training spanning day and night. Of note, Second Artillery combined arms training consists of “organic training for the entire brigade under simulated war conditions.”<sup>448</sup>

### SECOND ARTILLERY NOTIONAL EXERCISE

In order to implement its campaign theory, Second Artillery training places a great deal of emphasis on mobility and operating under reduced manning due to expected heavy casualties. They also emphasize camouflage, concealment, and deception (CC&D).

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<sup>444</sup> “Online Troop Training Proves Effective,” *Huojian bao*, 20 August 1999.

<sup>445</sup> *Jiefangjun bao*, unidentified date in September 2000.

<sup>446</sup> “Communications Regiment Trains for Emergency Mobile Support,” *Huojian bao*, 21 March 1999.

<sup>447</sup> “Brigade Upgrades Military Training,” *Huojian bao*, 26 May 2001.

<sup>448</sup> “Brigade Commander on Combined Arms Training,” *Huojian bao*, 6 October 2001. Generally, the PLA defines combined arms training as training by two or more branches within the same service. However, Second Artillery is a branch, not a service. Therefore, Second Artillery uses this term liberally to refer to training by all of its troops.

Based on a compilation of PLA writings, the next few paragraphs provide a notional mobile exercise by a brigade involving several hundred vehicles and over 1,000 troops in four echelons moving a total of 5,000 kilometers by rail and road for several days.<sup>449</sup>

During the first day, the brigade received a third-degree war readiness order, at which time mobilization orders were issued.<sup>450</sup> At 1500 hours, the brigade's equipment inspection regiment received orders to conduct a complete inspection of all equipment.<sup>451</sup> At midnight, battle orders and documents were transmitted to the combat *fendui* via the local area network linked to equipment inspection stations. The launch *fendui* and their support forces composed of several hundred vehicles departed immediately via rail and road for their launch positions. Regardless of the terrain and weather conditions, the convoy that traveled by road periodically operated without lights at night in order to avoid detection.<sup>452</sup>

As part of its CC&D mission, false launch-related vehicles capable of traveling at 40 kilometers per hour were built in about 30 minutes by assembling boards on vehicle chassis. These and other false vehicles disguised as special equipment and communications vehicles give off the same radar, infrared, and thermal imaging coefficients as real trucks. Meanwhile, the main fleet of vehicles moved along another route. When the trucks stopped, they had different types of netting to conceal them in wooded and open areas.

Throughout the exercise, the launch *fendui* carried out various types of training, including electronic interference, concealment, camouflage, emergency evacuation, tunnel survival, simulated launches, anti-airborne force, anti-air raid, anti-nuclear, and chemical defense.<sup>453</sup> The *fendui* also practiced field survival training and equipment tests at various temperatures. While en route, the logistics *fendui* conducted decontamination training against nuclear, biological, and chemical attacks, as well as water purification and cooking in a contaminated environment.<sup>454</sup> Vehicle refueling also took place under these conditions.

Once the battalions reached their launch positions, they were informed that an enemy satellite would soon be overhead and to implement various CC&D measures for all the vehicles. Some of the equipment vehicles became a "small hill covered with

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<sup>449</sup> The notional exercise is based on multiple articles from 1999-2002 from *Jiefangjun bao* and *Huojian bao*. The information in this particular sentence describing the scenario comes from "Unidentified Second Artillery Base Conducts Long-Range Mobile Operations Training," *Huojian bao*, 28 June 2001.

<sup>450</sup> *Huojian bao*, 29 November 1999. There is no explanation of the different war readiness degrees.

<sup>451</sup> "Equipment Inspection Regiment Holds Online Drill," *Huojian bao*, 6 July 1999.

<sup>452</sup> "Brigade Commander Discusses Guerilla-Type Operations," *Huojian bao*, 7 June 2001.

<sup>453</sup> This is a composite of numerous articles from *Jiefangjun bao* and *Huojian bao*.

<sup>454</sup> "Anhui Missile Base Logistics Unit Holds Drill," *Huojian bao*, 25 April 1999.

bushes,” while other vehicles disguised their appearance as “civilian houses with chimneys emitting smoke.”

Once the first-degree combat order was received, the vehicles moved to their launch positions and waited for the launch command to be given.<sup>455</sup> As the launchers moved to their positions, further CC&D measures were implemented, including releasing a smoke screen, setting out triangular and square angle reflectors to defeat enemy radar waves, and employing chaff launchers.<sup>456</sup> The *fendui* also built a false launch position to attract enemy satellite, electronic, and aerial surveillance. When the launch command was received, the missiles were launched in a sequence, resulting in “multi-wave precision strikes.”<sup>457</sup>

Although this was a notional exercise compiled by the authors from information on multiple Second Artillery exercises, the goal was to show Second Artillery is clearly trying to implement its campaign doctrine.

## CONCLUSION

Second Artillery has historically been the least transparent part of the PLA, but more information is slowly becoming available to the public from Chinese open source material, from the Congressionally-mandated annual DoD reports on China’s military posture, and from the unclassified version of various U.S. National Intelligence Estimates. Western PLA watchers have tended to focus on Second Artillery’s missiles, support equipment, and associated hardware reforms, as well as China’s nuclear doctrine. As more information becomes available, however, it is now possible to begin examining Second Artillery’s software reforms, including the organizational structure, personnel issues, professional military education, training, and foreign relations program.

PLA doctrinal writings identify two main types of Second Artillery campaigns: nuclear retaliation campaigns and conventional missile attack campaigns. Both are described as highly complex in terms of technology and organization, and in both cases, Second Artillery appears to infer that, in order to achieve success, they must be prepared to absorb high losses of personnel and equipment if attacked by enemy missiles. The importance of peacetime preparations, coordination, and adherence to a strict chain of command—in most cases reporting directly to the chairman of the CMC—are thus given heavy emphasis.

Second Artillery appears to recognize that in order to successfully prosecute the types of campaigns it envisions, highly skilled personnel will be required to maintain and

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<sup>455</sup> *Huojian bao*, 29 November 1999. The article, of which the authors only have the English translation, appears to make a difference between a “war readiness order” and a “combat order.” Based on other PLA writings, *yiji zhandou zhiling* (一级战斗指令) has been noted for first-degree combat order.

<sup>456</sup> *Huojian bao*, 26 November 1999; see also “Camouflage Improves Base Survivability In Wartime,” *Huojian bao*, 22 March 2001.

<sup>457</sup> “Progress in Conventional Missile Training,” *Jiefangjun bao*, 15 March 1999. The Chinese term for multi-wave launch is *boci fashe* (波次发射).

operate the high-tech weaponry involved, and to perform all of the specialized logistics and support of both nuclear and conventional missile campaigns. These personnel need to be prepared to work under the assumed difficult conditions they would face in an actual campaign—manning weapons systems that the enemy would consider to be key and primary targets.

To ensure that the needed manpower is available, Second Artillery has begun to re-examine the methods through which it recruits, develops, and retains the talent it will need to achieve its vision. As with the PLA as a whole, Second Artillery has become active in civilian colleges and universities. To aid in its recruitment efforts, it has established recruitment offices in several schools and selected a growing number of civilian college students to participate in China's new national defense scholarship program.

Perhaps more than other branches of the PLA, China's decade long economic boom has created special challenges for a high-tech Second Artillery. When faced with competition from higher-paying private sector companies, it is simply more difficult to attract and retain the expertise that Second Artillery requires. One of the primary ways it has addressed this is by providing material incentives for what one can surmise must be the most elusive groups: civilian college graduates, scientific and technical officers, and military academy and research institute faculty. How effective these programs will be at addressing retention issues remains to be seen, but it should be noted that such policies do leave open the possibility of creating resentment and tensions between the Second Artillery "haves" and "have nots."

For Second Artillery, the challenges of coping with rapidly evolving technologies and the challenges associated with integrated operations has led to the development of some new approaches to professional military education. This has mainly entailed increasing emphasis and allotting funds and facilities to promote continuing education and instituting a less specialized approach to military academy education. Officers of different specializations are now forced to spend more time training together on areas outside their normal duties in order to gain a broader understanding of Second Artillery as a whole.

Other efforts to develop the talents and broaden the experience of Second Artillery officers include participation in its foreign military relations. Although traditionally very insular, Second Artillery participation in foreign military relations is increasing.

From an organizational perspective, one of the biggest changes in the past decade has been the creation of several new Second Artillery SRBM brigades opposite Taiwan, plus at least one brigade belonging to the Nanjing MR ground forces. Changes in the organizational structure have also occurred with the transition to mobile DF-21s from DF-3s with both a conventional and nuclear capability against regional targets. The increase in deployed missiles has taken place at a time when the rest of the PLA has been reducing its overall manpower, the number and size of its units, and the number of older weapon systems and equipment. However, by understanding the basic brigade organizational structure for the different types of missile systems, it should be easier to predict the incremental changes in China's future missile force. Too often, large numbers are thrown out without basing them on an organizational methodology to predict the increase in missiles.

Second Artillery's nuclear force is directly subordinate to the CMC through the GSD. Therefore, one of the most important questions concerning the inclusion of conventional theater missiles in Second Artillery's inventory and their use in joint service war zone campaigns is how the PLA is handling command and control issues. Under which circumstances, if any, will the authority to employ these missiles be chopped to the war zone commander? This question becomes even more problematic when considering the existence of conventional missile brigades within the PLA ground forces as well as Second Artillery. Although beyond the scope of this paper, further research on this topic is needed to fill some important gaps.

Second Artillery has used technology to make several advancements in the field of training. For example, the introduction of its digital microwave communication system has allowed Second Artillery to upgrade its training and operational readiness, and the increasing use of computers has greatly shorten the amount of time required for several types of training.

Despite the reduced period of mandatory service for conscripts, Second Artillery apparently has improved its ability to assimilate new and modified missiles into the inventory and to add new units in a shorter period of time than was required ten years ago. It also appears that the training cycle is not as dependent on the annual conscription cycle as it was in the past. It is not clear, however, whether the new NCO system has been a decisive factor in the development of this capability.

As Second Artillery continues down its path of reform, these institutional aspects and "software" issues will play a large role in implementing the PLA's vision. At some times, they will hinder change, and at other times, they will enable transformation. They are worthy of observation as the PLA strives to bridge the gap between aspirational doctrine and operational capabilities.

## APPENDIX A: HISTORY OF THE DEVELOPMENT OF SECOND ARTILLERY

In early 1955, the CCP Central Committee decided to develop nuclear energy and manufacture nuclear weapons. Based on the “Report on Developing and Producing Rocket Weapons” Premier Zhou Enlai made the decision in May 1956 to develop missiles with Soviet assistance.

In September 1956, the Soviets provided China with two R-1 missile samples for teaching purposes, accepted 50 Chinese students to study rocket technology, and sent five Soviet professors to China to teach Chinese students.

In November 1956, the National People’s Congress (NPC) created the 3<sup>rd</sup> Ministry of Machine Building (MMB/*jixie gongyebu*; 机械工业部) to manage the nuclear weapons development program and construction of the nuclear industry.<sup>458</sup> The 3<sup>rd</sup> MMB was renamed the 2<sup>nd</sup> MMB in February 1958 when the existing 2<sup>nd</sup> MMB was merged into the 1<sup>st</sup> MMB.

In May 1958, the CMC established the 5<sup>th</sup> Department under the Ministry of National Defense (MND/*guofangbu*; 国防部), which was responsible for PLA special weapons R&D and equipment development. In October 1958, the Party Central Committee approved a CMC report on “Reorganizing the Commission of Aviation Industry into the Commission of Science and Technology for National Defense (NDSTC)” with Nie Rongzhen as the director. In April 1959, the 5<sup>th</sup> Department was merged with NDSTC.

### Missile Development and Testing

In 1958, the CMC authorized construction of the Northwest Comprehensive Missile Test Base (NCMTB) at Shuangchengzi, Gansu Province, to conduct testing of surface-to-surface (SSM), surface-to-air (SAM), and air-to-air missiles (AAM). NDSTC was the controlling authority. When construction was completed in 1960, NCMTB apparently consisted of four basic entities—the base with control organizations for SSMs, SAMs, and AAMs, and three separate test ranges. In March 1962, China’s first domestically-produced missile was tested, but failed its first flight.

In June 1964, China successfully test-fired the indigenously-designed Dongfeng-1 (DF-1) short-range missile from NCMTB. In October 1964, China conducted the first atomic bomb test and started developing short, long, and intercontinental range ballistic missiles. Between the mid-1960s and summer of 1970, a new launch site was constructed

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<sup>458</sup> In August 1952 the 1<sup>st</sup> MMB was created to manage all civilian production, including shipbuilding, and the 2<sup>nd</sup> MMB was created to manage all defense industries, with subordinate bureaus for ordnance, tanks, and aviation. In November 1956, the 3<sup>rd</sup> MMB was established for the nuclear industry and nuclear weapons. In February 1958, the 1<sup>st</sup> and 2<sup>nd</sup> MMBs were merged into the 1<sup>st</sup> MMB and the 3<sup>rd</sup> MMB was renamed the 2<sup>nd</sup> MMB. The MMBs are also referred to as MMIs (Ministry of Machine Building Industries).

for the preliminary stage tests of medium and intermediate range SSMs and launch tests for intercontinental ballistic missiles.

### **Establishing the First Missile Units**

In December 1957, the CMC decided to establish an SSM training unit near Beijing. In 1958, “the Special Artillery Corps” was established under the CMC. The initial training possibly took place at the special weapons school (*tezhong wuqi xuexiao*; 特种武器学校), also known as the PLAAF 15<sup>th</sup> Aviation School (*hangkong xuexiao*; 航空学校), which was established in September 1958 in Baoding, Hebei Province. The school was responsible for training all services on surface-to-surface, surface-to-air, and shore-to-ship missile maintenance. Over 600 officers and soldiers assembled from various units across the PLA conducted the first six-month training period, using 30 sets of rudimentary technical teaching materials hastily put together over three months. In June 1959, the CMC dissolved the training unit and set up two missile launch battalions, one of which was at an unidentified artillery school in northwest China in March 1960. It is not clear where the second battalion was stationed.

### **Second Artillery Established in 1966**

In June 1966, the CMC combined staff members from a public security unit and an artillery troop staff element that had been managing strategic missiles within the CMC. On 1 July 1966, Second Artillery was officially founded under the CMC with its headquarters in Beijing.

In July 1967, Xiang Shouzhi (向守志), who was a deputy commander of a ground force artillery corps, was appointed Second Artillery’s first commander, and Li Tianhuan (李天焕) was appointed as the political commissar.<sup>459</sup> At that time, the relevant missile troops and schools belonging to the artillery troops were transferred to Second Artillery.

### **Early Campaign Training**

According to one *Xinhua* report, by the mid-1970s, Second Artillery had organized a massive long-range firing practice with live warheads, involving moving operations, camouflaging, and launching.<sup>460</sup> The report also stated that in August 1983, Second Artillery conducted its first large-scale combined-arms campaign training exercise (*hecheng xunlian zhanyi yanxi*; 合成训练战役演习) to examine the units’ overall fighting capability.

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<sup>459</sup> *Zhongguo renmin jiefangjun de 70 nian* [70 years of the PLA], edited by the Academy of Military Science History Research Department, published by Military Science Publishers, July 1997, p. 575.

<sup>460</sup> Zhang Jiajun and Zao Zhi, “The Strong Contingent of Secret Rockets: The Historical Course of Development of China’s Strategic Guided Missile Units,” *Xinhua*, 7 July 1996.

In August 1983, Second Artillery conducted its first nuclear counterstrike exercise, which involved three levels—corps (*bingzhong*; 兵种), base (*jidi*; 基地), and detachments (*zhidui*; 支队).<sup>461</sup> In 1984, Second Artillery officially began alert duty.<sup>462</sup> On 1 October 1984, at a ceremony in Beijing to mark the 35<sup>th</sup> anniversary of the founding of the PRC, Second Artillery made its first public appearance in Tiananmen, with a display of strategic missiles.

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<sup>461</sup> *Zhongguo renmin jiefangjun de 70 nian* [70 years of the PLA], edited by the Academy of Military Science History Research Department, published by Military Science Publishers, July 1997, p. 637.

<sup>462</sup> *Zhongguo junshi baike quanshu* [Chinese military encyclopedia], Beijing: Academy of Military Science Publishers, July 1997, Volume 9, p. 1567. The terms used for starting alert duty are *kaishi danfu zhanbei zhiban renwu* (开始担负战备值班任务).



## APPENDIX B: SECOND ARTILLERY ORGANIZATIONAL STRUCTURE

The following bullets provide information from various sources about the leadership, administrative, and operational structure of Second Artillery's six levels.<sup>463</sup>

- Second Artillery Headquarters (*erpao*; 二炮)
  - The headquarters is a military region-level organization
  - The commander and political commissar are grade33 officers (military region *dajunqu zhengzhi*; 大军区正职) with the primary rank of general and secondary rank of lieutenant general
  - First level administrative departments include the:
    - Headquarters Department (*silingbu*; 司令部)
    - Political Department (*zhengzhibu*; 政治部)
    - Logistics Department (*houqinbu*; 后勤部)
    - Equipment Department (*zhuangbeibu*; 装备部)<sup>464</sup>
  
- Missile base (*daodan jidi*; 导弹基地)
  - A missile base is an army-level (*jun*; 军) organization
  - The commander and political commissar are grade-5 officers (*zhengjun zhi*; 正军职) with the primary rank of major general and secondary rank of lieutenant general

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<sup>463</sup> Qian Haihao, ed., *Jundui zuzhi bianzhixue jiaocheng* [Course material for the study of military organizational structures], Beijing: Academy of Military Science Press, March 2001, p. 75; *Zhongguo junshi baike quanshu* [Chinese military encyclopedia], Beijing: Academy of Military Science Publishers, July 1997, Volume 2, p. 348; *Junshi zuzhi tizhi yanjiu* [Military organization system research], Beijing: NDU Publishers, June 1997; Mark A. Stokes, *China's Strategic Modernization: Implications for the United States*, U.S. Army Strategic Studies Institute, September 1999; *Shijie junshi nianjian* [World military yearbook], Beijing: PLA Press, 1987-2001. Multiple articles from *Jiefangjun bao*.

<sup>464</sup> There is no consensus in Western writings whether *zhuangbeibu* is translated as Equipment Department of Armament Department, but we have chosen the literal translation of Equipment Department.

- First-level administrative departments include the:
  - Headquarters Department (*silingbu*; 司令部)
  - Political Department (*zhengzhibu*; 政治部)
  - Logistics Department (*houqinbu*; 后勤部)
  - Equipment Department (*zhuangbeibu*; 装备部)
- Missile bases have the following subordinate battle, technical, and logistics support units (*zhandou jishu houqin danwei*; 战斗技术后勤单位)
  - Missile brigades (*daodan lü*; 导弹旅)
  - Training regiment (*xunlian tuan*; 训练团)
  - Vehicle battalion (*qiche ying*; 汽车营)
  - Equipment inspection regiment (*zhuangjian tuan*; 装检团)<sup>465</sup>
  - Transportation station (*zhuanyun zhan*; 转运站)
  - Communications regiment (*tongxin tuan*; 通信团)
  - Repair depot (*xiupei chang*; 修配厂)
  - Hospital (*yi yuan*; 医院)
  - Command office (*zhihui shi*; 指挥室)
  - Weather office (*qixiang shi*; 气象室)
  - Chemical defense elements (*fanghua fendui*; 防化分队)
  - Engineering elements (*gongcheng fendui*; 工程分队)
  - Survey and mapping elements (*cehui fendui*; 测绘分队)
  - Computer elements (*zhuyuan jisuan fendui*; 诸元计算分队)

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<sup>465</sup> For the nuclear force, each base has a nuclear warhead equipment inspection unit (*he dantou zhuangjian budui*; 核弹头装检部队), which implies it is a regiment-level organization.

- Control elements (*kongzhi fendui*; 控制分队)
  - Camouflage elements (*weizhuang fendui*; 伪装分队)
  - Reconnaissance elements (*zhencha fendui*; 侦察分队)
  - Technical testing elements (*jishu ceshi fendui*; 技术测试分队)
  - Electronic countermeasures elements (*dianzi duikang fendui*; 电子对抗分队)
- Missile brigade (*daodan lü*; 导弹旅)
    - The commander and political commissar are grade-8 officers (*zhenglü zhi*; 正旅职) with the primary rank of colonel and secondary rank of senior colonel
    - First-level administrative departments include the
      - Headquarters Department (*silingbu*; 司令部)
      - Political Division (*zhengzhichu*; 政治处)
      - Logistics Division (*houqinchu*; 后勤处)
      - Equipment Division (*zhuangbeichu*; 装备处)
    - Missile brigades are the Second Artillery's basic operational unit (*jiben zuozhan danwei*; 基本作战单位)
    - Missile brigades for both the nuclear and conventional forces have the following subordinate operational and support organizations
      - Launch battalions (*fashe ying*; 发射营)
      - Communication elements (*tongxin fendui*; 通信分队)
      - Launch position management elements (*zhendi guanli fendui*; 阵地管理分队)
    - For the conventional missile force, each launch brigade also consists of the following subordinate battalions
      - Technical battalions (*jishu ying*; 技术营)

- Communication battalions (*tongxin ying*; 通信营).
- Launch battalion (*fashe ying*; 发射营)
  - The commander and political instructor are grade-11 officers (*zhengying zhi*; 正营职) with the primary rank of major and secondary rank of lieutenant colonel
  - For the nuclear force
    - The launch battalion is the basic firepower unit
    - Launch battalions with liquid propellant missiles have the following subordinate organizations
      - Launch companies (*fashe lian*; 发射连) or company-equivalent launch elements (*fashe fendui*; 发射分队), which are the smallest launch organizations
      - Testing elements (*ceshi fendui*; 测试分队)
      - Control elements (*kongzhi fendui*; 控制分队)
      - Refueling elements (*jiazhu fendui*; 加注分队)
  - For the conventional force
    - Launch battalions have several subordinate company-level and/or platoon-level launch elements (*fashe fendui*; 发射分队)
      - Launch companies may have several subordinate launch platoons, which are the smallest possible launch organizations
        - The commander and political instructor are grade-13 officers (*zhenglian zhi*; 正连职) with the primary rank of captain and secondary rank of first lieutenant
      - The launch platoon is the conventional force's basic firepower unit
        - The commander and political instructor are grade-15 officers (*zhengpai zhi*; 正排职) with the primary rank of second lieutenant and secondary rank of first lieutenant

## APPENDIX C: THE PLA'S FOREIGN RELATIONS PROGRAM

The desire for countries to maintain a cordial relationship with China is reflected in the number of military exchanges the PLA has been involved in over the past twenty years. The number of delegations during the 1990s nearly doubled the number from the previous decade. When the PLA celebrated its 50<sup>th</sup> anniversary in October 1999 and when the PLA celebrated its 75<sup>th</sup> anniversary in August 2002, *Xinhua* carried various articles reviewing fifty years of PLA diplomacy. Highlights from those reports are as follows.<sup>466</sup>

Since reform began in 1978, senior PLA officers have led over 1,600 delegations to more than eighty countries. The PLA has welcomed over 2,500 military delegations from five continents, involving tens of thousands of people, of which more than half of the delegations were led by defense ministers, joint service commanders, chiefs of the general staff, and service commanders. China has formed military diplomatic ties with 146 foreign countries and sent military attachés to 103 countries, while 74 foreign countries have stationed military attachés in China. During the 1990s, the Academy of Military Science interacted with counterparts in 27 countries. Since the National Defense University was founded in 1985, it has received 749 military delegations from 79 countries, involving 6,407 foreign military personnel. Since 1991, the PLA has sent over 20,000 people in more than 800 specialized technical delegations overseas to investigate, cooperate in research, and participate in studies.

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<sup>466</sup> Huang Cailong, "Moving Toward the World and Peace: Roundup of Five Decades of PLA Foreign Military Interaction," *Xinhua*, 14 September 1999 (FBIS-FTS19991005000721); "China's Military Diplomacy Forging New Ties," *Xinhua*, 28 October 2002.

Name	Position	Date	Delegation Leader	Country Visited
LTG Qian Gui	Deputy Commander	Aug 1991	Chi Haotian, Chief of General Staff	Russia
LTG Yang Guoliang	Commander	Sep 1995	Chi Haotian, Minister of Defense	France, Spain, Portugal, Finland
LTG Sui Yongju	Political Commissar	May 1996	Chi Haotian, Minister of Defense	Egypt, UAE, Saudi Arabia, Kuwait
LTG Yang Guoliang	Commander	Nov 1996	Yang Guoliang, Second Artillery	Saudi Arabia
LTG Zhao Xijun	Deputy Commander	Dec 1996	Chi Haotian, Minister of Defense	United States
LTG Sui Mingtai	Political Commissar	May 1998	Yu Yongbo, Director, General Political Department	Cuba, Mexico
LTG Sui Mingtai	Political Commissar	Jan 2000	Chi Haotian, Minister of Defense	South Korea, Russia, Britain, Mongolia
LTG Huang Cisheng	Deputy Commander	Apr 2000	Fu Quanyou, Chief of General Staff	Japan, Nepal, Germany
LTG Zhao Xijun	Deputy Commander	May 2000	Zhang Wannian, CMC Vice Chairman	Spain, Italy, Portugal
Gen Yang Guoliang	Commander	Aug 2000	Yang Guoliang, Second Artillery	Russia, Finland

**Table 6.3 Second Artillery Delegation Members on PLA Visits Abroad**

### ARMS CONTROL

As part of its foreign relations program, the PLA is an important participant in China's arms control process, including policymaking and negotiations at home and abroad.<sup>467</sup> According to Chinese officials, every year the Ministry of Foreign Affairs coordinates a research plan for the next year's program at the Conference on

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<sup>467</sup> Unless stated otherwise, the information in this portion on arms control negotiations was obtained from interviews with Chinese academics involved in arms control issues.

Disarmament in Geneva, concerning matters such as the Nuclear Nonproliferation Treaty (NPT), Comprehensive Test Ban Treaty (CTBT), Chemical Weapons Convention (CWC), fissile material cutoff, and land mines. The appropriate military and civilian offices work together on the research plan and on formulating arms control policy.

Depending upon the issue involved, different PLA entities have specific responsibilities for making or coordinating arms control policy. Second Artillery is the most secretive of the PLA organizations involved in arms control, and reportedly is directly involved in all issues involving nuclear weapons. Specifically, Second Artillery is involved in CTBT and NPT issues. Second Artillery reportedly has its own arms control group, but they rarely coordinate with other arms control organizations, especially with non-military organizations.



## **APPENDIX D: SECOND ARTILLERY COMMANDERS AND POLITICAL COMMISSARS**

Primary Source: *Zhongguo Junshi Baike Quanshu* [China Military Encyclopedia], Academy of Military Science Publishers, July 1997, vol. 9, p. 1568, for list of commanders and political commissars.

### **COMMANDERS**

Xiang Shouzhi (向守志): 1966-?

Yang Junsheng (杨俊生): ? - ?

Zhang Yixiang (张翼翔): ? – 1975

Li Shuiqing (李水清): Sep 1977 – Nov 1982

He Jinheng (贺进恒): Nov 1982 – Aug 1985

Li Xuge (李旭阁): Aug 1985 – Nov 1992

Yang Guoliang (杨国梁): Nov 1992 – Jan 2003

Jing Zhiyuan (靖志远): Jan 2003 - Present

### **POLITICAL COMMISSARS**

Li Tianhuan (李天焕): 1966-?

Wu Lie (吴烈): ?-?

Chen Fahong (陈发洪): ?- May 1975

Chen Heqiao (陈鹤桥): May 1975 – Nov 1982

Liu Lifeng (刘立封): Nov 1982 – Apr 1990

Liu Anyuan (刘安元): Apr 1990 – Nov 1992

Sui Yongju (隋永举): Nov 1992 – Dec 1997

Sui Mingtai (隋明太): Dec 1997 – Present

## COMMANDER BIOGRAPHIES

**Xiang Shouzhi** (向守志): Born November 1917 in Sichuan. Joined the Red Army in 1934. Served in 9<sup>th</sup> Corps; participated in the Long March; entered infantry school in 1936; 8<sup>th</sup> Route Army 129<sup>th</sup> Division as deputy company commander, company commander, battalion commander, deputy regiment commander, regiment commander. During civil war, served in 1<sup>st</sup> *zhidui* as deputy *zhidui* commander, 2<sup>nd</sup> brigade commander, 9<sup>th</sup> *zongdui* 26<sup>th</sup> brigade commander, 2<sup>nd</sup> Field Army 15<sup>th</sup> corps 44<sup>th</sup> division commander and concurrently political commissar. After 1949, served in Korean War as division commander and as 15<sup>th</sup> corps chief of staff. After returning to China in 1954, he served as the 15<sup>th</sup> corps deputy commander and commander. In 1960, graduated from senior officer military academy. Served as Artillery Technical Academy president, PLA artillery corps deputy commander, Second Artillery commander (1966-?)<sup>468</sup>, and Nanjing Military Region deputy commander and then commander (1982-1990). In 1955, received rank of major general. In 1988, received rank of general. Member of 12<sup>th</sup> Communist Party Central Committee.<sup>469</sup>

**Yang Junsheng** (杨俊生): No bio. Yang was the Beijing Garrison Command's political commissar in 1980.<sup>470</sup>

**Zhang Yixiang** (张翼翔): Born June 1914 in Hunan. Died in April 1990. 1929 joined Red Army. Served in 1<sup>st</sup> front army as platoon commander, company commander, and battalion commander; participated in Long March; after arriving at Yan'an, served in Red 6<sup>th</sup> Juntuan 52<sup>nd</sup> regiment as chief of staff; after anti-Japanese war began, studied at Anti-Japanese Military-Political University; 1938 served as 4<sup>th</sup> Route Army 4<sup>th</sup> *zhidui* instructor (political/*jiaodao*) *dadui* as commander; 14<sup>th</sup> regiment commander, 2<sup>nd</sup> division 6<sup>th</sup> brigade deputy commander, 5<sup>th</sup> brigade deputy brigade commander, 2<sup>nd</sup> *zongdui* in Jiangsu-Zhejiang military region deputy commander; during civil war, served as Shandong field army 1<sup>st</sup> *zongdui* 3<sup>rd</sup> brigade commander, Huadong field army 1<sup>st</sup> *zongdui* chief of staff and deputy commander, 3<sup>rd</sup> Field Army 20<sup>th</sup> corps commander; in 1950 fought in Korean War as 9<sup>th</sup> *bingtuan* commander and concurrently political commissar; returned to China in 1952, served as Huadong Military Region deputy chief of staff; 1957 graduated from military academy, then served as Fuzhou Military Region deputy commander, PLA railway corps commander, Second Artillery commander; 1975-1985,

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<sup>468</sup> *Zhongguo Renmin Jiefangjun da shiji 1927-1982* [People's Liberation Army chronicle 1927-1982], Beijing: PLA Academy of Military Science, November 1983, p. 379.

<sup>469</sup> *Zhongguo junshi baike quanshu* [China military encyclopedia], Academy of Military Science Publishers, July 1997, Vol. 9, p. 1281.

<sup>470</sup> BBC Summary of World Broadcasts, 14 February 1980, Part 3 The Far East; B. Internal Affairs; China II; FE/6345/BII/15, from 'Peking Daily' 1 February 1980.

served as Academy of Military Science vice president. 1955 received rank of lieutenant general. Member of 9<sup>th</sup> and 10<sup>th</sup> Party Central Committee.<sup>471</sup>

**Li Shuiqing** (李水清): Born November 1917 in Jiangxi. Joined the Red Army in 1930. Served in the Red 1<sup>st</sup> jun tuan political department, the 1<sup>st</sup> division political department propaganda team chief, the 13<sup>th</sup> regiment as a company political instructor; participated in the Long March; during the Anti-Japanese War, served in the 8<sup>th</sup> Route Army 115<sup>th</sup> division 343<sup>rd</sup> brigade as a battalion political instructor; the 33<sup>rd</sup> regiment as political division director, the jin-cha-yi (Shanxi-Hebei) military region 7<sup>th</sup> regiment political commissar, 11<sup>th</sup> *fenqu* deputy political commissar and concurrently director of the political department; during the civil war, served in the Shanxi-Hebei field army 3<sup>rd</sup> zongdui 7<sup>th</sup> brigade as the deputy political commissar, in the Huabei military region 2<sup>nd</sup> zongdui 5<sup>th</sup> brigade as the political commissar, in the 67<sup>th</sup> corps 199<sup>th</sup> division as the commander. In 1951, joined the Korean War as the 67<sup>th</sup> corps deputy commander. In 1952, returned to China and studied at a military academy. Beginning in 1955, he served as a corps commander, Jinan Military Region deputy commander, minister of the 1<sup>st</sup> Ministry of Machine Building, and Nanjing Military Region deputy commander. From September 1977 to November 1982, he was commander of Second Artillery. 1955 received the rank of major general. Member of the 9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup> Party Central Committee and the 6<sup>th</sup> and 7<sup>th</sup> National Political Consultative Standing Committee.<sup>472</sup>

**He Jinheng** (贺进恒): Born February 1919 in Shanxi. Joined 8<sup>th</sup> Route Army in 1938. Served in various political instructor and commissar positions in infantry and artillery units. Following the Anti-Japanese War, he served as an artillery battalion political instructor, Shandong *bingtuan* artillery regiment chief of staff, 3<sup>rd</sup> Field Army 25<sup>th</sup> corps artillery *bingtuan* regiment commander. Beginning in 1952 during the Korean War, he served as the 7<sup>th</sup> Artillery Division commander. After returning to China in 1953, he studied at the senior artillery school, then stayed as the director of the tactics department. In 1956, he served as the artillery corps' training division director, deputy director of the artillery military scientific research department, commandant of the Zhengzhou artillery school, second artillery base deputy commander and commander; Second Artillery chief of staff, and then concurrently deputy commander, and commander (November 1982 – August 1985). Member of 12<sup>th</sup> Party Central Committee and 7<sup>th</sup> National People's Congress Standing Committee.<sup>473</sup>

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<sup>471</sup> *Zhongguo junshi baike quanshu* [China military encyclopedia], Academy of Military Science Publishers, July 1997, Vol. 9, p. 1466.

<sup>472</sup> *Zhongguo junshi baike quanshu* [China military encyclopedia], Academy of Military Science Publishers, July 1997, Vol. 8, p. 685.

<sup>473</sup> *Zhongguo junshi baike quanshu* [China military encyclopedia], Academy of Military Science Publishers, July 1997, Vol. 7, p. 425.

**Li Xuge** (李旭阁): Born January 1927 in Hebei. Joined the 8<sup>th</sup> Route Army in December 1943. Served as a cadet in the East Hebei Military Region 13<sup>th</sup> *fenqu* military political cadre school, company cultural instructor, supply officer in the Hebei Jehol Liaoning military region special affairs regiment; during the civil war, he served as the East Hebei military region headquarters department staff officer, 15<sup>th</sup> *fenqu* headquarters department branch director, independent 5<sup>th</sup> division headquarters department deputy section director, Huabei Military Region 8<sup>th</sup> *zongdui* 23<sup>rd</sup> brigade 69<sup>th</sup> regiment deputy chief of staff, and 65<sup>th</sup> corps 194<sup>th</sup> division 582<sup>nd</sup> regiment chief of staff; in February 1951, served in Korea as a corps headquarters department section director and deputy division director; he returned to China in 1953; in 1954 he served in the General Staff Department's operations department as a staff officer and deputy division director; in 1969 he served as a division commander; in 1975 he was the General Staff Department operations department deputy director; in 1982 he became Second Artillery deputy commander; from July 1985 to November 1992, he was commander of Second Artillery. He was a member of the 13<sup>th</sup> Party Central Committee and 8<sup>th</sup> National People's Congress Standing Committee. In 1988 he received the rank of lieutenant general.<sup>474</sup>

**Yang Guoliang** (杨国梁): Born in 1938 in Hebei. After graduating from the Beijing Institute of Aeronautics and Astronautics (Beijing Hangkong Xueyuan), he joined the PLA. He served in the Commission for Science, Technology, and Industry for National Defense (COSTIND) as a base staff officer, deputy section director, deputy regiment commander, deputy division (*chu*) director, division director, base deputy commander, and base commander. He then served as Second Artillery deputy commander (September 1985 to November 1992) and commander (November 1992 to December 2002). In March 1998, he was promoted to general.<sup>475</sup>

**Jing Zhiyuan** (靖志远): Birthdate unknown. Jing became the Second Artillery commander in January 2003, following the 16<sup>th</sup> Party Congress, where he was selected as a full member of the central committee. Previously, he served as the Second Artillery chief of staff from April 1999 to December 2002. Prior to that, he was the commander of Base 52 at Huangshan, Anhui Province.<sup>476</sup>

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<sup>474</sup> *Zhongguo junshi baike quanshu* [China military encyclopedia], Academy of Military Science Publishers, July 1997, Vol. 8, p. 691.

<sup>475</sup> *Zhongguo junshi baike quanshu* [China military encyclopedia], Academy of Military Science Publishers, July 1997, Vol. 9, p. 1348.

<sup>476</sup> "Jing Appointed New Commander of the PLA Second Artillery," *China Times* (Taipei), 17 January 2003.

## POLITICAL COMMISSAR BIOGRAPHIES

**Li Tianhuan** (李天焕): Born 1912. Died May 1986. Public Security Force (PAP predecessor) deputy political commissar in 1955, also received rank of major general. Second Artillery political commissar from Jul 1966-?.<sup>477</sup>

**Wu Lie** (吴烈): No bio. In 1980 and 1981, he was the Deputy Political Commissar of the Peking units and second political commissar of the Peking garrison command.<sup>478</sup>

**Chen Fahong** (陈发洪): Born 1916. Died June 1980. Was the Second Artillery political commissar from unknown date until May 1975. Last position when he died in 1980 was Wuhan Military Region deputy political commissar.<sup>479</sup>

**Chen Heqiao** (陈鹤桥): Born in August 1914 in Anhui. Joined Red Army in 1932. Served as Red 28<sup>th</sup> corps 82<sup>nd</sup> division political department propaganda team director, Red 25<sup>th</sup> corps political department publishing (*wen yin*) section director. Participated in Long March. After arriving at Yan'an, served as Red 15<sup>th</sup> *juntuan* political department publishing section director. In September 1937, studied at Anti-Japanese Military Political University. After graduation, served as a school political department party affairs section director, senior cadre section political division director, and Taihang Army Middle School political commissar. In September 1943, served as Party Central Committee Beifang Bureau secretariat division director, then as Hebei-Shandong-Henan Military Region political department organization department director. During the civil war, he served as Zhongyuan Military Region and Zhongyuan field army 2<sup>nd</sup> field army political department organization department director. After 1949, he served in the Xinan Military Region political department organization department director and concurrently cadre management department director, the 14<sup>th</sup> corps political commissar. In 1958, graduated from the PLA political academy. In May 1960, served as the Kunming Military Region deputy political commissar, then the PLA Signal Corps political commissar.

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<sup>477</sup> *Zhongguo Renmin Jiefangjun da shiji 1927-1982* [People's Liberation Army chronicle 1927-1982], Beijing: PLA Academy of Military Science, November 1983, p. 379; Liu Hsiao-hua, "People's Armed Police Ties to PLA," *Kuang chiao ching*, No. 307, 16 April 1998, pp. 42-47; "Death: Former Political Commissar of Second Artillery," BBC Summary of World Broadcasts, 3 June 1986, Part 3 The Far East; B. Internal Affairs, China II; FE/8275/BII/1 (from *Xinhua* in Chinese, 29 May 1986).

<sup>478</sup> "Other Reports on PLA Affairs; Peking Units Political Commissar at Awards Ceremony," BBC Summary of World Broadcasts, 1 March 1980, Part 3 The Far East; B. Internal Affairs; China II; FE/6359/BII/3; from *Xinhua*, 27 February 1980.

<sup>479</sup> "PLA Affairs; Memorial service for Wuhan deputy commissar," BBC Summary of World Broadcasts, 19 June 1980, Part 3 The Far East; A. International Affairs; China II; FE/6449/BII/6, from *New China News Agency*, 13 June 1980.

From May 1975 to November 1982, served as Second Artillery political commissar. In 1955 received rank of major general. Member of the 6<sup>th</sup> National People's Congress Standing Committee.<sup>480</sup>

**Liu Lifeng** (刘立封): Born May 1918 in Shandong. Died in February 1996. 1939 joined Red Army 8<sup>th</sup> Route Army Shandong *zongdui* political department organization department as a staff officer and served in various Shandong area units as a political instructor. After the Anti-Japanese war, served in the Central Shandong Military Region 9<sup>th</sup> Division political department as a section director, Huadong Field Army 8<sup>th</sup> *zongdui* health department as the political commissar, the 3<sup>rd</sup> field army 26<sup>th</sup> corps logistics department as the deputy political commissar and political commissar. Beginning in November 1950, he served in the Korean War in the 9<sup>th</sup> *bingtuan* as a division deputy political commissar, the *bingtuan* political department directly subordinate work (*zhi gong*) department deputy director, and the *bingtuan* headquarters department management division political commissar. He returned to China in 1953, and thereafter served as Shandong Military Region political department organization department director, the Jinan Military Region political department organization department director, General Logistics Department political department director, Second Artillery political department director and concurrently deputy political commissar. From Nov 1982 to April 1990, served as Second Artillery political commissar. In 1998 received rank of lieutenant general.<sup>481</sup>

**Liu Anyuan** (刘安元): Born December 1927 in Shandong. Joined Communist Party in November 1943. Joined 8<sup>th</sup> Route Army in August 1945 and served in the Northwest. In March 1947 he served as a political instructor in the Dongbei Democratic United Army's 6<sup>th</sup> *zongdui*. In 1949, he served in the 4<sup>th</sup> Field Army 43<sup>rd</sup> Corps battalion political instructor, regiment political commissar, and artillery regiment commander. In 1961 entered an artillery school as a student. In 1965 became a division deputy political commissar and political commissar, then a corps deputy political commissar. In 1973 he became the General Political Department organization department deputy director, cadre department deputy director, and then Guangzhou Military Region deputy political commissar. In 1987 he became the General Logistics Department political commissar. In April 1990 he became Second Artillery political commissar. From November 1992 to December 1993, he served as the Nanjing Military Region as the political commissar. In 1988 he received the rank of lieutenant general. He was a member of the 13<sup>th</sup> and 14<sup>th</sup> Party central committee.<sup>482</sup>

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<sup>480</sup> *Zhongguo junshi baike quanshu* [China military encyclopedia], Academy of Military Science Publishers, July 1997, Vol. 7, pp. 144-145.

<sup>481</sup> *Zhongguo junshi baike quanshu* [China military encyclopedia], Academy of Military Science Publishers, July 1997, Vol. 8, p. 736.

<sup>482</sup> *Zhongguo junshi baike quanshu* [China military encyclopedia], Academy of Military Science Publishers, July 1997, Vol. 8, pp. 725-726.

**Sui Yongju** (隋永举): Born in 1932 in Dalian, Liaoning. Joined the PLA in April 1950. He first served in the Public Security Service in various positions in Luda. He then served in a Second Artillery's construction and engineering regiment as a political division organization branch director and regiment political division director, Second Artillery base political department organization division deputy director and director, regiment political commissar, base political department deputy director, base political commissar, Second Artillery political department director and deputy political commissar. In November 1992 he became the Second Artillery political commissar. In 1988 he received the rank of major general and was promoted to lieutenant general in July 1990, then promoted to general in January 1996. In October 1992 he became a member of the Party Central Committee Discipline Inspection Commission.<sup>483</sup>

**Sui Mingtai** (隋明太): Dec 1997 – Present. Previously Sui served as the political commissar at Base 52 in Huangshan, Anhui Province (1989-1991), the deputy director of the political department at Second Artillery Headquarters (1991—1995), director of the political department at Second artillery Headquarters (1995-1997), and moved to the political commissar position in 1997.<sup>484</sup>

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<sup>483</sup> *Zhongguo junshi baike quanshu* [China military encyclopedia], Academy of Military Science Publishers, July 1997, Vol. 8, p. 1092.

<sup>484</sup> *Directory of PRC Military Personalities*, no publisher given, October 1999.