

# REFORMS IN PLA TRAINING

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For almost over three decades, since formation of People's Republic of China (PRC) in 1949, a regular system of Professional Military Education (PME) and training for the People's Liberation Army (PLA) had not evolved. With Soviet assistance, it introduced a Soviet-style military academy system that was limited to imparting a few basic military skills. PLA officers primarily learned their business through practical experience and from the lessons learnt during various wars that the PLA was involved in.<sup>1</sup> From the experiences gained during these wars, it was clear that the PLA faced new challenges in order to transform itself from a largely low tech, poorly educated force into a modern military with navy, air force, armoured units, and other specialised units capable of defending the PRC.

Chinese military training, until recently, was widely dismissed as infrequent, unrealistic and overly scripted. In the 1980s and 1990s, outside observers and internal critics alike, raised doubts about the utility of the PLA exercises, and it was clear that, training deficiencies represented one of the most serious challenges. As far as People's Liberation Army Air Force (PLAAF) is concerned, it was believed that its pilots flew an insufficient number of hours on a yearly basis and that the limited training they received was unrealistic and heavily scripted.<sup>2</sup>

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1. Yuan Wei and Zhang Zhuo, chief eds., *Zhongguo junxiao fazhanshi (History of the development of China's military schools)*, (Beijing: Guofang daxue chubanshe, 2001), pp. 890-894.
2. Ken Allen, Glenn Krumel, and Jonathan Pollack, *China's Air Force Enters the 21<sup>st</sup> Century*, (Santa Monica, CA: RAND), 1995, pp. 127-134.

PLA has been concentrating on training and Professional Military Education (PME), especially since 1979 Vietnam War. Having learnt its lessons from recent wars, Chinese military has understood the importance of military training and has identified deepening of troops' training and academy education reforms as a long-term strategic task. Under the new system conducting integrated training based on the information system, is the key to innovating training mode and further promoting transformation in military training. In recent years, the PLA has implemented a series of training reforms, and many units have been engaging in considerably more frequent, realistic and challenging training.<sup>3</sup> Moreover, as part of its reforms, the PLA has begun to employ more rigorous standards of evaluation to improve quality and effectiveness.

Information now plays the leading role throughout the whole training process, and PLA is focussing on core military capabilities to improve comprehensive qualities of the officers and men. Military academies stress on deepening education reform, optimise the teaching contents and vigorously build up the faculties to promote their transition in knowledge and abilities in light of the development of the PLA's information construction and military struggle preparations.

### **EVOLUTION OF CHINESE PME**

Development of Chinese PME got a boost in 1980's with Deng Xiaoping's strategic decision and the founding of China's National Defence University (NDU). In June 1985, during a critical meeting of the Central Military Commission (CMC), Deng Xiaoping advanced his strategic decision which justified the deepening of China's economic reform and modernisation, as well as its opening to the outside world. It rejected Mao's notion of imminent war and argued that the international system would be dominated by peace and development. This set the stage for a major change in Chinese defence policy, including a dramatic downsizing of the PLA and a change in PLA strategy away from traditional people's war and luring in deep toward

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3. Yang Huicheng and Liu Xingan: "GSH Makes Arrangements for Military Training in 2006," *Liberation Army Daily*, January 18, 2006.

a strategy of limited warfare fought at or just beyond China's borders.

The strategic decision ushered in a number of PME reforms. First, in conjunction with the decision to downsize the PLA, a decision was made in 1986 to downsize the number of military academies.<sup>4</sup> More reductions were discussed, though the next major round of reductions did not occur until after 1995. Another important change made was the decision to create graduate programmes at military academies. After 1985, a small number of academies were granted permission to begin building master's programmes. Since then, the programme has expanded, and the number of military academies allowed to grant advanced degrees has steadily increased, with most of the PLA's educational institutions now offering graduate courses.

The other significant change was the creation of the NDU in 1985 by merging the PLA's Military Academy, Political Academy, and Logistics Academy. Known as the "Cradle of Generals" and reporting directly to the CMC, the creation of the National Defence University (NDU) was a crucial development in Chinese PME because, until this time, PME was essentially single service in nature. NDU became first truly all-service PLA academy.<sup>5</sup> For the first time after its founding, the PLA finally had an educational institution that had the ability to promote jointness across the PLA. These initial efforts to improve and reform PME were given further importance following the Gulf War of 1991. China then instituted new strategic guidelines emphasising the importance of both modern hi-tech conditions and of having officers educated in the new technologies necessary to fight under such conditions. This led to further deepening of

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4. Yuan Wei and Zhang Zhuo, *Zhongguo junxiao fazhanshi (History of the development of China's military schools)*, (Beijing: Guofang daxue chubanshe, 2001), p. 895.

5. "China National Defence University: Cradle of Generals," *Kuang Chiao Chuang*, in *FBIS-CHI*, December 16, 1998.

educational reforms and an even greater emphasis on officer education, reflecting a major rethink of the PLA's basic strategy.<sup>6</sup>

The "Two Transformations" announced in 1995 marked another major turning point in the development of the Chinese PME. While the reforms in PME that have followed, built on the trends that had already started in the 1980s, they also represented a revaluation of what kind of officer and PME the PLA needs. The two transformations focussed on an army preparing to fight local wars under normal conditions to an army preparing to fight under modern high-tech conditions, and from an army based on quantity to an army based on quality.<sup>7</sup>

The 1991 Gulf War, the conflict in Kosovo, and the 1995-96 crises in the Taiwan Strait, all served to convince Chinese leaders that they had to reassess how they should prepare for future conflicts, and this has included reassessing how they should conduct PME and train more technologically proficient officers and men for the 21<sup>st</sup> century.<sup>8</sup> Another set of important changes in PME revolve around the turn to civilian education since 1999.<sup>9</sup> These efforts have centred on; recruiting college graduates, creating a national defence scholarship and reserve officer training programme, developing research and teaching arrangements with civilian universities and sending military personnel to civilian institutions for postgraduate work. China now has a large, well-funded, and better quality civilian education system from which the PLA can recruit the officers and enlisted personnel it needs for warfare under informationalised conditions.

With regards to training in the PLAAF, during early days since formation of PRC, the then USSR sent experts to China to build a flight academy and supply training aircraft, and continued to provide valuable training to PLAAF pilots during the Korean War in actual air warfare and from 1953 to 1955 including night flying, advanced combat manoeuvres and training in adverse weather conditions. By 1957, PLAAF had developed its first flight

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6. Yuan and Zhang, p. 927.

7. "Hi-Tech Local wars' Basic Requirements for Army Building," *Zhongguo Junshi Kexue* no. 4, in *FBIS-CHI*, November 20, 1998.

8. *Ibid.*

9. "Major Reform of the Concept of Military Education: Guo Anhua Discusses Questions of Carrying Out Innovative Education," *Jiefangjun Bao* in *FBIS-CHI*, 1999.

training manual based on the Soviet training manual and experiences from Korean War and past training. From this point until 1964, PLAAF pilots regularly underwent training once in a year matching Warsaw Pact standard.

Even though the PLAAF knew the importance of training, the PRC leadership thought it was capitalistic to train. Mao even gave orders to compress flight school programme from two years and four months to one year. Much of the flight training and aircraft related manuals were destroyed as part of the Cultural Revolution (CR); the training programmes and flight school recovered after Cultural Revolution and was back to normal by 1983. However, PLAAF doctrine, tactics and training had not changed much since the Korean War.<sup>10</sup> Although PLAAF was a separate air force on paper, but it was just a tactical support force for the army. In all of the PLA's conflict since its formation, PLAAF has never attacked or defended on its own. Its ground support mentality was not just a function of equipment limitations, but also part of the general doctrine/mindset within PLA. On the other hand PLAAF does not seem to have undertaken any air-to-ground operations in any war starting with the Korean War.

As a result, PLAAF continued to be stuck with outdated training procedures and faced a dilemma of developing training that strikes a balance between maintaining safety while increasing difficulty level. Not only being outdated in doctrine and training, PLAAF also proved to be woefully inadequate in large scale exercises because it rarely had integrated training at that point. It was only after the establishment of Flight Training Test Centre (FTTC) in 1987, that the best pilots were sent to conduct testing of flying training and of new aircraft and equipments, while developing new techniques and tactics. In the 90s, FTTC spent more time on routine training than trying out new flying techniques due to its lack of experience in modern tactics.

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10. Available at [www.informationdissemination.net/2011/08/evolution-of-plaaf- Doctrine/ Training](http://www.informationdissemination.net/2011/08/evolution-of-plaaf-Doctrine/Training). Accessed on July 23, 2012.

The next important part to the transformation of the PLAAF training was the establishment of a new air force test training test base in Dingxin built in June of 1999.<sup>11</sup> Since its establishment, the number of aircraft and the complexity of simulated war scenarios have increased every year. The simulations have really showed the disparity in the training level and intensity of different forces around the country. They have also given PLAAF a much clearer view of the regiments that are better trained than the others are, therefore, often rewarded with newer aircraft. Using new tactics from FTTC and simulations, PLAAF have learnt to better utilise Su-27s and conduct different aerial combat missions.

Since 1999, Dingxin has also undergone three large scale expansions to double its size and allow the training for an entire aviation corp. This is the only large scale aviation & air defence integrate training base in the country. Since 2005, PLAAF has been doing red sword/blue sword integrated tactics exercises to copy USAF's red flag/blue flag. By Red Sword 2008, exercises at Dingxin had progressed to complex division level or even military region level confrontations. PLAAF started training and developing tactics as a whole rather than just within individual Military Region (MR). This shows that PLAAF's role has changed from just serving for ground units to being able to operate independently to carry out attacks. The induction of Airborne Warning and Control System (AWACS) also allows PLAAF to command & control over 100 aircraft. PLAAF aims to form several AF strike groups under the direction of Beijing MR for offensive missions. Each individual MR will simply exist for training and logistics.

PLAAF tactics and training have also been undergoing a rapid transformation. PLAAF is actively trying to learn better training programmes and flight school programmes from the West. It has increased training with other air forces in the recent years. During the past years, PLAAF has held exercises with Turkey and Pakistan. People's Liberation Army Navy (PLAN) is also undergoing a similar transformation, although it seems PLAN's training hasn't evolved as much as PLAAF training.

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11. Available at [www.china-defence-mashup.com/1952.html](http://www.china-defence-mashup.com/1952.html). Accessed on July 24, 2012.

## LESSONS FROM WARS AND PME REFORMS

PLA war experience spans from the Korean War of 1950-53, the Sino-Indian border war of 1962, the Sino-Soviet border war of 1969, the Sino-Vietnamese naval battles of 1974, and the Sino-Vietnamese border war of 1979 (there were also naval skirmishes with Vietnam in 1988 and with the Philippines in 1994 over the Spratly Islands).<sup>12</sup>

As for the lessons and experiences from the air wars, the PLAAF had very limited wartime operational experience upon which to draw. Indeed, the only significant air combat operations conducted were in Korean War of 1950-53 and over the Taiwan Strait in 1958. The fighting in Korea constituted an important experience for the newly formed PLAAF, not only as a test case for this fledgling service but also in the development of Chinese air power.<sup>13</sup>

During the Korean War, the inexperience and lack of rigorous combat training of Chinese Communist airmen, as well as technical deficiencies of their aircraft, cost the PLAAF serious personnel and aircraft losses. An important lesson learnt from the war was the importance of air defence. The US air force wrought tremendous devastation on North Korea and seriously impaired Communist Party of Vietnam (CPV) ground operations, especially ravaging supply lines. Indeed, because of Korea, the Chinese gave concerted attention to improving air defences for military installations and cities throughout China. Since Korean War, the PLAAF has had little occasion to be tested in combat. Although PLAAF air units from Hainan afforded air cover for the Chinese Communist assault on the Paracel Islands in January 1974, the lack of South Vietnamese air opposition precluded any opportunity for combat testing of either the men or machines of the mainland air force.

Prior to its self-defence counterattack into the territory of the Socialist Republic of Vietnam (SRV) on February 17, 1979, there were increasing

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12. Kenneth W. Allen, "PLA Air Force, 1949-2002: Overview and Lessons Learned," in Burkitt, Scobell, and Wortzel, eds., *The Lessons of History*, pp. 89-96.

13. Yu Bin, "What China Learned from its 'Forgotten War' in Korea," in Ryan, Finkelstein, and McDevitt, eds., *Chinese Warfighting*, pp. 123-142.

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doubts about the combat readiness and effectiveness of the PLAAF.<sup>14</sup> PLAAF aircraft had severely limited troop support and ground attack capabilities in any reasonably sophisticated anti aircraft environment. The Vietnamese enjoyed effective battlefield air defence systems of Soviet derivation. Under these circumstances the Chinese Communist air command had every reason not to want to commit its aircraft to battle

during this conflict.

The decision to restrict the role of the PLAAF in the punitive war against Vietnam may have also been influenced by political considerations, in addition to the known equipment deficiencies. Pilots and crew of the PLAAF were not sufficiently well trained to carry out the complex procedures associated with tactical air support. The decision not to commit Chinese Communist air units to air combat or troop support was the consequence of recognising the inferiority of PLAAF air combat and ground support capabilities in addition to the political constraints and general strategic concerns of the PRC.

Regarding Chinese lessons from the Gulf War, the PLA writings suggest that these two wars have been very influential, affecting Chinese tactical, operational, and strategic thinking. Not only have these wars affected Chinese military doctrine, promoting greater jointness, but they have also underscored the impact of information technology. This is reflected not only in an emphasis on increasing access to information within all aspects of Chinese military operations, the informationalisation of the PLA, but also has led to renewed emphasis on political warfare, as embodied in the concepts of psychological warfare, public opinion warfare, and legal warfare.

Operation Desert Shield/Desert Storm in 1991 and Operation Iraqi Freedom in 2003, provided indications of the consequences of war in the post-Cold War environment, unconstrained by the superpower stand-off,

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14. Xiaoming Zhang, "China's 1979 War with Vietnam: A Reassessment," *China Quarterly*, 2005.



might entail. They showed the way the US fought, what the Chinese term “local wars,” and showcased modern military technology, not only in terms of long-range, precision strike weapons, but also command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR). Indeed, the two wars highlighted for the PLA the evolving role of information, not only at the tactical level, but also at the operational and strategic levels.

According to the PLA Encyclopaedia, the first Gulf War showed the importance of securing dominance of the electromagnetic spectrum, the role of aerial attacks as a strategic factor, deception, coordinated operations among different services, and deep attacks in the rapid attainment of campaign objectives besides logistical support to sustain high-technology weapons. The Chinese military followed the progress of the first Gulf War closely which had a great effect on the PLA.<sup>15</sup>

At the strategic level, perhaps the most fundamental lesson learnt is that, the nature of warfare had radically changed and such wars are marked by several characteristics. Firstly, they generally involve the large-scale use of information technology, advanced materials, aerospace systems, and other advanced technologies in weapon systems. These weapon systems do not operate in isolation, but instead are integrated with each other. Combat operations involve the linkage of reconnaissance, communications, command, weapons, and logistics systems into an integrated or unified combat system. Secondly, local wars under high-tech conditions often cover vast expanses, which requires much more extensive command and control capability and the rate of expenditure of weapons is much higher in such wars. In the Gulf War, the expenditure of munitions is assessed as 10 times that of the Korean War, and four times that of the Vietnam War.

The PLA in order to prepare for such wars, formulated a new national military strategy in 1993, termed as the “Military Strategic Guidelines for the New Period”. These strategic guidelines for the new period laid out an assessment of the new nature of modern war and how the PLA should deal

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15. Major General Wang Baocun, “China and the Revolution in Military Affairs” *China Military Science*, no. 4, 2001, p. 151.

with the resulting challenges. Embodied within these new military strategic guidelines were the main areas for PLA modernisation and reform. These included the incorporation of more science and technology within the PLA; enhancing the quality of PLA personnel; improving the PLA's organisation and logistical infrastructure; and continued emphasis on ideological and political work.

The importance of campaigns can be seen in the new combat regulations published in 1999, generically referred to as the "New Generation Operations Regulations". These represented a wholesale change to PLA doctrine, placing campaigns at the forefront of the conduct of future operations. Furthermore, the capstone of these new operational directives is the joint campaigns of the Chinese PLA. These regulations made it clear that the PLA had to be prepared to fight future wars through the interplay of all of its services and the Second Artillery, rather than primarily relying on the ground forces. That is, for the PLA, future wars would be joint wars, fought at the campaign level.

In some ways, the second Gulf War served to reinforce and refine the lessons from the first Gulf War. Thus, at the strategic level, Chinese assessing the significance of the Iraq War concluded that the world marked by "Peace and Development" was not very peaceful. According to a group of PLA officers drawn from the Academy of Military Sciences and the NDU, weakness or backwardness meant that one will be beaten.<sup>16</sup> In this regard, weakness refers not only to military capabilities, but to the full range of factors comprising comprehensive national power.

In addition, the second Gulf War further refined the PLA's understanding of local wars. From local wars under high-tech conditions, the PLA transitioned to viewing future conflicts as local wars under informationalised conditions. This was reflected in the 2004 PRC Defence *White Paper*, which observes, "The forms of war are undergoing changes from mechanisation to informationalisation. Informationalisation has become the key factor in enhancing the war fighting capability of the

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16. Guo Meichu, *Discussion of High-Tech Local Wars*, (Beijing, China: AMS Publishing, 2003), pp. 174-176.

armed forces".<sup>17</sup> At the operational level, this means a greater emphasis on information and the range of technologies associated with it, as well as operations to exploit the related advances that information technology has generated.

PLA began to increase both informationalisation and integrated jointness after the second Gulf War. The Nanjing MR, for example, organised a war-zone joint-combat communications training event in July 2004 to discuss Army, Navy, Air force, and Second Artillery combat communications requirements. Improvements in information technology have also accelerated command decision-making, allowing for more rapid actions and responses. In the view of the PLA, precision munitions will only become more important in the future, given their accuracy and lethality. Employed against an enemy's command and control infrastructure, as they were in the second Gulf War, an enemy's defences will be rapidly disrupted, reducing their ability to resist and shortening the length of the conflict.

**PLA Training Reforms:** At the end of 2007, *PLA Daily* announced that PLA's new generation training doctrine is being studied to improve PLA operational performance in future hi-tech conflicts and wars. The new training doctrine has one special part for Joint Combat Training (JCT) and the other seven parts for troops and serviced personnel from the Army, Navy, and Air Force, Secondary Artillery, Armed Police, Testing Support units and reserved armed forces. Comparing with previous training programmes, five new features can be found to outline the PLA's training improvement.<sup>18</sup>

Firstly, training subjects related to non-war operation like peace-keeping

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17. PRC State Council Information Office, *China's National Defence in 2004*, Beijing, China: State Council Information Office, 2004.

18. Available at [www.china-defence-mashup.com/plas-training-is-in-transformation.html](http://www.china-defence-mashup.com/plas-training-is-in-transformation.html). Accessed on July 24, 2012.

have been added. Secondly, JCT is given greater attention by PLA. Thirdly; more new systems and equipments are involved in training in order to fully realise warfare systems performance in war time. Fourthly, most of the training is now designed under sophisticated Electronic-Magnetic (EM) condition. Finally, the training and evaluation standards are getting closer to real combat.

Simulations, virtual exercises, and other forms of technology-assisted training are mainstays for the modern military. Not only do these forms of training reduce costs and lower physical risk to military personnel, they also offer the opportunity to experiment with new operational concepts and bridge vast geographic and bureaucratic divides to improve operational performance. As the PLA rapidly modernised, it also aggressively pursued technology-assisted training because of the efficiencies it offers to an institution operating in a relatively resource-constrained environment.

In recent years, the PLA has modified its core military guidance to reflect the goal of winning local wars under informatised conditions. Advocates of informatisation have concluded that it is not necessary to completely follow the entire mechanisation process of the developed countries and then carry out informatisation. Instead, the military plans to strengthen mechanisation building while at the same time attempting to speed up the pace of informatisation, thus following the path of development by leaps and bounds. The critical factor enabling this leap ahead is the larger information technology revolution underway in China.

The limited funds for the informationisation of weapons and equipments require a prioritisation of the digital and informationised refitting of existing weapons and equipment. The PLA is crafting a new path, using its relatively advanced command, control, communications, computers, intelligence surveillance, and reconnaissance (C4ISR) architecture as a force multiplier to network together its relatively primitive conventional forces in ways that can defeat a more technologically advanced adversary,

In the process of developing and interpreting the PLA's guidance on winning local wars under informatised conditions, the military leadership has promulgated parallel sets of guidance on professional military education

and operations training. After Hu Jintao's first speech on training in April 2005, the PLA began with small steps. While informatised conditions were mentioned in the 2005 and 2006 directives, it was not characterised as the main theme. The principle tasks of the 2006 directives were to train with realistic combat scenarios, to raise the level of standardised military training, and to actively and prudently study integrated training. The 2005 main theme likewise emphasised integrated and standardised training. In 2006, the General Staff Department (GSD) directives called for enhancing officers' and soldiers' knowledge of informatised technologies to solve problems.<sup>19</sup>

The 2007 GSD training directive builds upon these evolutions, calling for the PLA to increase research on military training under informatised conditions, develop training in a complex electromagnetic environment, focus on improving units' integrated joint operations capabilities under informatised conditions, and continue to explore integrated training, which includes training that integrates the key factors of joint operations under informatised conditions.

In its current form, the primary modalities for informatised training reform are eight-fold and include: the regional joint training, networked and synchronised training, simulation training, distributed interactive training, reality simulation training, systems integration training, fuzzy authorisation training and long-distance monitoring and control training.

**PME Concepts for Jointness:** The PLA continues to develop a more complex form of joint operations capability. A system of systems integrated communications network, building joint military talent and development of a joint operations doctrine are fundamental to this effort; yet, the PLA perceives the persistence of significant problems. The PLA is taking a multi-faceted approach to find solutions including professional military education reform to educate and train joint commanders and staff; construction of an integrated command, control, computers, communications, intelligence surveillance and reconnaissance (C4ISR) system; and experimentation and testing concepts and communications systems in joint exercises.

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19. James Mulvenon , *Technology and Simulation in the Chinese Military Training Revolution*. Available at [www.strategicstudiesinstitute.army.mil/pdffiles/pub858.pdf](http://www.strategicstudiesinstitute.army.mil/pdffiles/pub858.pdf).

Despite years of the development, PLA self-assessments in 2011 continued to identify joint command methods and integrated communications as problem areas limiting the development of a joint operations capability. The PLA publications discuss command and control problems, including the need to resolve the issue of overlapping command relationships in the current command and control structure and the need to optimise the command network for effective integration of forces with a joint C4ISR architecture.<sup>20</sup>

**PME Reforms for Jointness:** An important component in achieving a joint operations capability is building a team of joint commanders and staff. The PLA is continuing to implement the 2003 strategic programme to develop military talent by reforming professional military education. The PLA initiated reorganisation of the military institutions and training in 2011 with a focus on improving training and education of joint operations commanders and staff officers. The PLA is also stressing the training of commanders, placing an emphasis on developing and promoting staff with great potential and has reformed graduate training programmes to cultivate joint operations commanders.

The General Staff Department (GSD) has initiated a reform and reorganisation of military educational institutes and training organisations to better support the development of military talent. The plan includes efforts to optimise structures, adjust training, integrate resources, and improve training and curricula. Mergers and readjustments of the PLA academies have already begun and the GSD created a new training department.<sup>21</sup>

Combined courses including the PLA and foreign military officers and increased joint training with foreign countries are also a part of the overall effort. These plans attempt to address the lack of interdisciplinary command talent and high-calibre information technology talent. Recent PLA press reports have highlighted programmes for joint operational commanders and staff officers at the NDU and National University of Defence Technology (NUDT).

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20. *PLA Daily*, July 14, 2011.

21. *PLA Daily*, September 20, 2011 and November 04, 2011.

An integrated C4ISR architecture with “system of systems” operations capability based on modern information systems will act as the foundation of the PLA’s joint operations capabilities. The lack of integration has, according to the PLA, caused the services to spin their wheels for many years, because of the inability to share a common operating picture and communicate laterally.

The PLA press has reported rapid developments made during the 10<sup>th</sup> and 11<sup>th</sup> Five Year Plans, yet integration remains problematic. According to the PLA, important components of the integrated system are early warning and reconnaissance, command and control, firepower attack, network warfare and comprehensive support, some of which were tested in joint training this year. Although the importance of information projects has been recognised at the national level, construction of integrated C4ISR systems has remained an ad hoc effort within individual MRs as evidenced in recent exercises.

In November 2011, the PLA announced that the research institute of the GSD Informationisation Department, until then, known as the Communications Department has finally developed a new-generation information system to integrate the ground forces, PLAN, PLAAF and PLA Second Artillery Force at all echelons. The new system was hailed as a major breakthrough supporting command and control in joint operations and filling a gap in the C4ISR network. It is difficult however to assess the veracity of the report, whether this really represents central direction to replace the individual regional efforts, how far the new system has progressed in the development process or how well it supports joint command and control, especially horizontal integration. Whatever the true state of the technology’s development, the PLA is looking to correct the technical inability of its forces to communicate across the services and branches.

**PLA Exercises and Operational Reforms:** Exercises provide the laboratory for experimentation and testing joint doctrine and integrated communications systems in a resistant medium that is as close as the PLA can get to real combat. Joint exercises in 2011 have continued the focus on experimentation to develop the joint command methods and C4ISR

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architecture that are fundamental to developing a modern joint operations capability. The continuing focus of experimental joint exercises on command methods and communications indicates that the PLA is still struggling with significant issues.

Several of the important PLA joint exercises in 2011, had high level observers, featured command and control coordination within joint task forces, testing of integrated C4ISR or both. Many of the exercises were described in the Chinese press as experimental, indicating that problems establishing joint command and control methods continue to remain. While ground force units still appeared to command many of the joint task forces in the exercises, the PLAAF or PLAN also led joint formations to provide joint command experience.

The GSD 2011 Military Training Plan emphasised improving integration of command information systems between the services, campaign planning and preparation, and joint command drills. Attempts to improve communications integration and command and control were evident in 2011 exercises. The PLA joint exercises have continued to experiment with command and control models in a joint task force. In the past, the Lianhe-series of experimental joint exercises in Jinan MR have tested command and control, and coordination methods within a joint task force.

Joint training in 2011 included joint air defense training led by the PLAAF, and joint disaster relief training featuring an integrated military-civilian emergency command system. According to Chinese press reports, some of the more important joint exercises in 2011 that tested command and control, and C4ISR issues include the following:

- A Nanjing MR joint amphibious landing exercise in August with first Group Army leading a multi-service joint task force, including the PLAAF and the PLAN. The exercise tested joint command integration of the force, based on an effort initiated in 2009 to construct an integrated



command and control system extending to units at the campaign and tactical levels designed to correct difficulties experienced over the past decade. This effort also included cross training the service personnel and developing joint operations staff personnel. The integrated communications system allowed the campaign-level joint task force to exercise joint firepower strikes, joint maritime defence and ground and air electronic countermeasures. Although the system was considered to function at a basic level and was incomplete, the press report did state that it integrated the joint forces and allowed the services to share operational information.

- The experimental “Qianwei-211” exercise, held at the Queshan Combined Arms Tactical Training Base (CATTB) in mid-summer, was directed by the Jinan MR employing a ground-air joint task force testing multi-level joint command and control, mobile command posts, transfer of command between command posts, and integrated command systems against a simulated “Blue Force”.
- The experimental “Lianmeng 211” joint exercise, held from 22-26 October 2011, featured a multi-service joint task force formed by Jinan MR Units and led by the North Sea Fleet. General Staff officers of the Jinan MR, and the other PLA organisations observed the exercise indicating its importance. This is one of the few examples of the PLA following through on its stated plan to alternate lead services for joint exercises to give each service experience in leading a joint task force. It however, needs mention that a unit given the lead in an exercise to gain joint experience does not mean this will be the case in wartime. This joint exercise had an amphibious landing phase, included PLAN, PLAAF, ground forces, the Second Artillery Force, People’s Armed Police (PAP) and reserve units. Training objectives included joint campaign planning, joint command coordination, political work and comprehensive logistics support.
- “Fuxiao-11”, a Lanzhou MR opposing force exercise in October 2011, included the 21<sup>st</sup> Group Army, providing the joint operation group commander. A multi-service joint task force included a ground force division and PLAAF and Second Artillery Force elements. Integrated

command and control, including coordination of air and ground firepower strikes and synchronisation of unit movements and actions during operational phases was exercised from mobile joint command posts to test multi-service command and a new joint C4ISR system.

- “Jingwei-2011” in Chengdu MR exercised a ground-air joint task force in late October 2011 testing informationised mapping and navigation support. Qi Jianguo, Director of the First Department (Operations) of the GSD, directed the exercise, accompanied by personnel from the four General Departments (Staff, Political, Logistics and Armament), national-level organisations, each MR and scientific research institutes. In addition to mapping and navigation support to joint campaign planning, joint objectives included precision command, coordination, fire strikes and logistics.
- Shenyang MR held the Lianhe-2011 joint exercise in October, exercising a ground-air joint task force coordinating air firepower support and a precision logistics system as well as testing a joint tactical integrated communication system.
- The “Qianfeng-2011 Queshan” exercise held at the Queshan Component Advanced Technology Test Bed (CATTB) in the fall featured a joint tactical exercise by an armoured brigade and PLAAF airborne troops to test innovations in command methods to improve the command process, combat planning and preparation; reduce redundancy in command functions; and improve target planning, preparation, and decision making.
- The Guangzhou MR directed a joint amphibious exercise with a multi-service joint campaign task force comprised of the 42<sup>nd</sup> Group Army, PLAN and PLAAF units testing a joint command system. The joint exercise was dispersed across 13 training sites testing the ability of the exercise headquarters to simultaneously control units from multiple services over a wide area of operations within a single scenario.
- An exercise of a ground-air joint tactical task force at the Zhurihe CATTB in Beijing MR, involving a mechanized infantry division of the 38<sup>th</sup> Group Army and a Beijing MR Air Force (MRAF) air division,

tested joint communications and information sharing under real combat conditions and in a complex electromagnetic environment. The PLA press reported that a new information system was tested.

The PLA focused on three areas to solve fundamental problems that are retarding operationalisation of a joint operations capability. The PLA continues experimenting with a new joint operations doctrine in exercises and reforming education and training of joint commanders and staff who will execute the new doctrine. However, it will take time to overcome identified problems in developing joint command and control models, testing joint operations concepts in exercises, constructing an integrated C4ISR architecture, and developing the command talent to lead joint task forces at the campaign and tactical levels.

The ad hoc development of an integrated C4ISR system, which will serve as the foundation for developing a modern joint operations capability, is undoubtedly slowing the PLA's efforts to develop a joint operations doctrine, and command and control structure and methods. C4ISR integration issues are limiting the results of experimentation and testing in exercises. While the GSD's announcement of a new integrated information system appears to be the type of high-level direction required to address the problem, the systems capabilities and deployment are unknown and likely to remain so for some time.

The PLA press notes some progress, but recognises that problems still remain. A focus of the 12<sup>th</sup> Five Year Plan is in the area of informationisation to refine and expand joint developments and use informationisation of the force to improve combat effectiveness. Experts in military technology at the NUDT are focussing on the need for the PLA to quicken the pace of developing an integrated C4ISR system, capable of supporting joint operations. While the PLA is making progress, development of a modern joint operations capability and deployment of a force wide integrated C4ISR system will take considerable time. Near-term modernisation and military talent reforms are planned for times much ahead.

**Pilots Training on New-Generation Aircraft:** As the Chinese air force moves out to meet the larger operational objectives of the PLA, change ultimately comes down to pushing the capabilities of airframes and the personnel who fly them or maintain them. For pilots, new training standards and regimens are requiring them to fly longer sorties in terms of time and distance, as well as mastering the abilities to fly over water, fly at night, fly at lower altitudes, and train in a complex electromagnetic environment. They are also flying from airfields other than their home bases. These are all major paradigm shifts for PLAAF pilots.

Overall, for PLAAF air units, the first decade of the 21<sup>st</sup> century has been an important period of transition during which older generation aircraft have been replaced or supplemented by new aircraft with significantly better capabilities. Transitioning to these new-generation aircraft has been one of the more daunting challenges facing PLAAF air units not only for the pilots, but also for maintenance and logistics support personnel. As new, more complex aircraft have entered the inventory, maintenance demands have gone up, and retraining to fly and maintain these aircraft has been the order of the day. In some cases, the pilots assigned to the new aircraft not only had to fly the aircraft, but they also had to become qualified as flight instructors and as flight commanders in the Air Traffic Control (ATC) tower. Pilots, maintenance, and logistics personnel helped to write tailored training manuals for flight operations and maintenance.

Finally, as is the case for the rest of the PLA, the PLAAF is now placing greater emphasis on more realistic combat training regimens than it has in the past, adopting a “train as you will fight” approach. For all of the branches of the PLAAF, this has meant more plausible exercise scenarios, less scripted exercises than had previously been the norm, increasing use of “Blue” OPFOR units, practicing operations in a hostile cyber and electromagnetic environment, expanded use of simulators, and more emphasis on lessons learned.

**Training by Flight Simulators:** China’s air force is expanding the use of flight simulation technology to hone fighter pilots’ skills and air battle tactics. One of the earliest institutes to study flight simulation in China, the

Flight Simulation Technology Research Institute of the Air Force is now able to develop simulators of the latest fighter jets that China produces. China's air force is expanding the use of flight simulation technology to hone fighter pilots' skills and air battle tactics

China's air force began to train fighter pilots with simulators a decade ago. So far, the institute alone has given at least 70 simulators to the air force and other units, which have provided 15,000 hours of training since 2002, which means huge amount of flying training costs are saved. Thanks to simulators, pilots can quickly master flying skills necessary for a certain type of fighter jet.

As China has increased the training flights for its pilots, it has also abandoned the old Soviet style rigid tactics. Pilots are now expected to show initiative and innovative flying tactics. To take advantage of this, last year the Chinese air force instituted a fighter pilot competition that culminates in an annual exercise that determines the ten fighter pilots would who be able to wear a "Golden Helmet" for the next year. This is a regular flight helmet, decorated with a special blue, red and gold pattern that marks the wearer as one of the elite combat pilots in the Chinese air force.

**University Training for PLAAF Pilots:** China's top science and technology university has set up a four-year pilot training course in association with the country's air force to train 32 pilots every year. Beijing-based Tsinghua University will set up a four-year pilot training course with China's air force, an official of the university said that aviation course will enroll 32 male high school graduates aged under 19 from across the country and train them to meet the challenges of high-tech and information-based instrument flying, state-run *China Daily*, reported. The trainees will study at the university's school of aerospace for the first three years and at the Aviation University of the PLA Air Force in the final year.

**PME towards Greater Interoperability:** A clear emphasis emerging from ongoing training reforms is the idea of systems conformation as a guiding principle for modern warfare. In no uncertain terms, this concept

**As China has increased the training flights for its pilots, it has also abandoned the old Soviet style rigid tactics.**

will figure prominently in future training. These reforms may even entail revision and reform of the Outline for Military Training and Evaluation (OMTE), promulgated in 2009. The director of the military training and Service Arms Department estimates that the essence of this revolution in military affairs is that military training must form the military's systems operations capabilities based on information systems, achieving the integration of various operational forces, operational units, and operational elements in accordance with the operational requirements of information dominance, systems confrontation, and joint victory.

The January 14, 2011 directive on military training released by the GSD of the PLA represents a roadmap for the Chinese military's training, and offers important indicators about the PLA military planning priorities and evolving threat perceptions. In general, the PLA training in the coming year appears poised to continue experimentation and modification of force structures to accomplish the long-term objectives of preparing the Chinese armed forces (PLA, People's Armed Police, and militia), supported by civilian capabilities, to execute longer-distance joint operations for deterrence, war fighting, and non-traditional security missions under complex electromagnetic conditions.<sup>22</sup>

In addition, the PLA in 2011 established the Military Training Department under the General Staff Headquarters, in accordance with an order issued by Hu Jintao, chairman of the CMC. The organ grew out of a department of military training and arms and services under the PLA General Staff. It is a historic overhaul for the military training of the PLA and a major step to strengthen joint training of different branches of the armed forces in the face of new situation and tasks. The department's reshuffling will enable the overall management of military training for the land army as well as the navy, air force, and the strategic nuclear force.

## CONCLUSION

In order to recruit and retain the personnel, the PLAAF needs to fight high-

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22. David Chen "2011 PLA Military Training: Toward Greater Interoperability", *China Brief*, vol 11, no 2, January 28, 2011.

tech 21<sup>st</sup> century warfare which remains a tough challenge, than acquiring the airframes the air force must have. Like the rest of the PLA, the PLAAF has put programmes in place aimed at attracting, educating, and retaining the people it needs, with increasing levels of technical competency and general education. The Chinese are taking the PME system, which is the product of many different trends and historical experiences and moving it in a direction different from the past; as the PLA tries to adapt to what it sees as its educational needs for the early 21<sup>st</sup> century.

**Chinese military writings are clear that informatised training must begin with informatisation of professional military education.**

Chinese military writings are clear that informatised training must begin with informatisation of professional military education. Informatisation is judged to be the best hope for solving a core problem within the PME system wherein the development of talented people urgently needed by many units is limited to book study and classroom work. To solve this problem, the PLA has introduced robust simulation training into the PME, and is integrating the effort with simulation and actual training in units.

With the approval of the CMC, the General Staff Headquarters (GSH) of the PLA, recently issued the general plan of military training reform in the 12<sup>th</sup> Five-Year plan period, providing the guiding principles, objectives and tasks as well as the measures and steps for military training reform. The plan proposes that by 2015, the IT based training conditions centred on bases, simulation and network will be greatly improved. The Chinese military officers of the future will be brighter tacticians, better educated and adept at commanding the highest tech weaponry under an innovative training plan to build better armed forces in the information age. PLA's implementation of the strategic project of personnel development of the PLA military by 2020, aims to establish a new personnel training and educating system, which combines basic and continuing education, academic and military education, and the domestic and overseas training.