Transformation of PLA Logistics System : An Analysis

Major General SB Asthana, SM, VSM*

General

The People's Liberation Army of China (PLA) is undergoing a revolution in Military Logistics. A historical review of PLA operations since Vietnam War (1979) reveals that logistics and combat sustainability have been a weak link in PLAs prosecution of operations. China's entry into Korean War (1951) and subsequent campaigns including the 1962 conflict exposed shortcomings in the Chinese logistics system. During this period, China followed the operational doctrine of *'active defence'* wherein the logistics system had short lines of supply, lacked rapid mobilisation and strategic transport capabilities. It was rigidly compartmentalised into separate service and regional systems, with little integration between them.

Growing Importance of Logistics

In 1991, Jiang Zemin, Chairman Central Military Commission (CMC) and Party General Secretary, included *'logistics support'* as one of the five major requirements to build-up the Army. He pointed out, *"There would be no high combat effectiveness without a strong logistic supply".* In 1999 he signed "PLA Joint Logistics Regulations" considered a landmark in transformation of PLA Logistics System.

Administrative requirements to support modern wars under high tech conditions/ informationalised conditions and lessons learnt from the US Iraq-Afghanistan wars compelled China to organise a *"precision logistics"* system which would render rapid, accurate and timely logistics support by using information technology, scientific organisation of logistics structures and adopting modern management means.1 The PLA is working on a multilateral approach to build a modern logistics system. It has initiated massive infrastructure development for integration of border areas, which have military implications as well. This paper analyses salient aspects of PLA's futuristic logistics system and their military implications.

Logistics Focus of PLA

Chinese Strategic Focus Impacting Infrastructure and Logistics Developments. With main strategic focus towards South and East China Sea (Taiwan and Spratly Islands), development of 'blue waters Navy and capability of projecting power beyond regional waters, China has not lost focus towards conventional operations in her periphery. The PLA would like to improve its military strength and overall capability to protect its energy sources and supply routes. The General Logistics Department of the PLA has embarked on modernisation of its combat logistics capability to enable sustained operations well beyond borders. China has also embarked upon massive infrastructure development in Tibet for integrating it with the Chinese system.

To this end, it is now improving its logistics system to support joint operations involving the three Services and Strategic Missile Forces (Second Artillery). This

would facilitate rapid deployment and amphibious operations of integrated forces. Enhancement of strategic airlift and mid-air refuelling capabilities, up-gradation of aircraft and development of blue waters Navy form part of the overall process to project China's power across its maritime boundaries and the Indian Ocean.

Doctrinal Issues having Logistics Implications. Doctrinal issues which have impacted the reorganisation and modernisation of PLA logistics system are enumerated below:-

(a) Integrated logistics support to sustain future wars.

(b) Additional requirements to support mobile warfare, amphibious and airborne operations.

(c) Logistics system to support projection of power missions and protect land and sea lanes of communications for unhindered flow of energy and commerce.

(d) Technical know-how to enhance strategic/tactical mobility and lethality of firepower.

(e) Need for lighter and modularised logistics system which would be compatible with the operations conducted by Rapid Reaction Forces (RRF).

Reorganisation of PLA Logistics System

Concept of Comprehensive Support. In contemporary Chinese military terminology all logistics functions fall under the concept of *"comprehensive support,"* which include separate categories of *'logistics'* and *'armament'* (or equipment) support. The PLA has two separate, systems to manage its comprehensive support needs.2 The *first* is the national-level General Logistics Department (GLD) which oversees "logistics support," and the second is the General Armament (or Equipment) Department (GAD or GED) which has jurisdiction over "armament support."

The GLD is the apex body providing logistics support to the three Services and Second Artillery.3 It has sub-departments which manage a wide range of support services, including supplies, transportation, military communications, financial affairs, health, petroleum, oil and lubricants, economic production, barracks and capital construction. The GLD also oversees PLA's efforts to grow much of its own food and production of clothing, equipment and consumable items.

The GAD was raised in 1998 at Beijing to provide wholesome armament support to PLA including procurement/acquisition of major weapons, equipment and ammunition, repair and maintenance, as well as R&D programmes. It maintains numerous research institutes, weapon test centres, nuclear test bases and satellite launch and tracking bases. Both, the GLD and GAD supervise an array of professional military education and research institutes.

Joint Logistics Support System. In 2000, the logistics departments of the seven Military Regions (MR) were reorganised and integrated into Joint Logistics Department (JLD) to manage all the administrative resources. Under the 'joint logistics' scheme, Air Force and Naval fleet transferred their 'general' logistics support elements common to all services (such as hospital, fuel, motor vehicle maintenance, etc.) to the MR JLD, while keeping 'specialised' logistics support elements unique to their own service.

About 30 logistics sub departments are subordinate to MR, each consisting of hospitals, warehouses, depots, and transportation units. Logistics sub departments form mobile support units to accompany combat forces in the field or at sea, away from their bases.4 As part of reforms in PLA reserve units, each MR has established a Reserve Logistics Support Brigade.

The GLD, through JLD of MR, manages approx 80 per cent of logistic needs; and Logistics Department of specific services manage balance 20 per cent of their specific requirements. The JLD is subdivided into regional logistics support (managing material and services within MR). The GLD has direct control over a number of supply units and strategic rear support bases around the country, providing *general logistics support.* The logistics department of arms and services is divided into *Organisational Logistics Support* which fulfill 'service specific' logistic needs, and *Logistics Support* for *Special Purposes* e.g. support for strategic rail mobile missiles. JLD has achieved commendable interface with the National Logistics Infrastructure.

Future Logistics Philosophy. A high priority is accorded for improving the combat service support functions in consonance with new operational concepts. The Chinese writings indicate that "The focus of logistics support will shift from reliance on quantity to reliance on speed and information, making full use of the technologies of informationalisation and digitisation; and delivering requisite quantity of resources at the right time and place. The degree of precision of logistic support in terms of time, space, variety, quantity, and the deployment of strength becomes a sign of effective support"5. An analysis of open source inputs reveals that future Chinese logistics philosophy would be characterised by following developments :-

(a) Unified joint logistics to overcome compartmentalisation among the Services.

(b) Light and modular logistics system compatible with mobile operations by Rapid Deployment formations.

(c) Integration and utilisation of civil transport and infrastructure.

(d) Emphasis on 'Just in Time' logistics as part of Precision Logistics.

(e) Integrated technological support for field formations and communication zones.

(f) Application of scientific methods in management of logistics.

(g) Increasing outsourcing / socialisation by reducing direct business operations by PLA and redeploying military resources for better combat logistics support.

Reforms in PLA Logistics System/Procedures

Aim of Logistics Reforms

The aim of reforms in the logistics system is to strengthen the existing joint logistics set-up to meet the requirements of modern warfare under high tech/ informationalised conditions. Major ongoing reforms in the PLA logistics system are covered in succeeding paragraphs.

Unified Joint Services Logistics Apparatus

PLA created its first-ever 'Unified Theatre Logistics Command System' in Nanjing Military Region in 1995. The Theatre Joint Logistics Department or Joint Logistics Department of Military Area Command is responsible for joint logistical support for all 'in-theatre' units of the three Services. This is a war time Command Centre with a support headquarters that comprises of representatives of the Logistics Department of the various Services arms. Jinan MR has set-up a joint oil distribution network to overcome supply shortfalls. Nanjing MR has established a joint military-civilian vehicle spare parts and maintenance operations system. Efforts are on to create a Corps of *'joint logisticians',* who would be trained to think about joint logistics support, rather than service-specific operations.

Mobilisation

China has established a system of National Defence Mobilisation Committees (NDMC) extending from Beijing to the county level. The NDMC system is the focal point for the integration of militia and civilian logistics assets to support active duty and reserve PLA operations and joins together the government, communist party and military leaders at all levels to oversee the functions of mobilisation. Along with local PLA headquarters, NDMC's organise civilian personnel, trucks, ships, and other material required to support PLA operations. Many local NDMC's are organised and equipped to serve as joint military-government-police headquarters in times of emergency. PLA is conceptualising to have Cyber Mobilisation Platforms (CMP).i.e. a network down to company level, enabling immediate call-up of every reserve officer and soldier as also gathering supplies, equipment and vehicles with the click of a mouse.

Strategic and Tactical Mobility

In earlier wars, PLA's transportation capabilities relied heavily on ground assets and were primarily tactical in reach. By 2012, PLA would have the lift capability for supporting three corps level operations, simultaneously.7 A modest fleet of transport aircraft and naval transport vessels have been acquired to boost strategic mobility. PLA is purchasing heavy lift assets from Russia to move their Heavy Brigade Combat Teams (HBCTs) and supplies from mainland to outlying provinces/remote parts of the world. The Chinese defence industry is also building cargo planes and ships that will replace foreign-purchased ships and aircraft by 2012.8

Logistics Support to Amphibious Operations. PLA Navy's amphibious lift capacity is estimated to be about one infantry division i.e. 10,000-12,000 personnel and equipment.9 (This is discounting a large number of amphibious vessels under construction in Chinese shipyards and resources of Ship Transport Units of PLA Ground and Air Force, and civil fleet). The airlift capability, is limited to about 11,000 parachutists in a single lift, depending on the quantity of equipment required to be lifted at the same time.10 The PLA plans to incorporate civilian ships, aircraft and crews for its wartime transportation requirements. Additionally, PLA in-flight refuelling capability is in its infancy and limited to small number of tankers and fighter aircraft. PLA Navy has a relatively small contingent of large logistics support ships and majority of its small support vessels are suitable for operations along the Chinese coast only.

Emergency Support Units and Reserve Logistical Support Brigades

Quick reaction logistical support units are vital to support frontline RRF. Senior PLA

leaders have outlined the requirement of “emergency” logistics teams for deployment in the field. A network of small-scale emergency support units and depots have been established in all MR over the past few years. PLA Navy has established emergency support units to support prolonged operations from detached forward bases. Reserve logistical support units have been set-up in recent years.

Joint Battle Zone Logistics Support

PLA is anticipating that vast quantities of material in future wars would necessitate restructuring of its battlefield logistics system. The new structure would integrate “fragmented logistics units” of PLA Army, Navy and Air force to provide regional joint support, under the “joint battle zone logistics support” concept, wherein the MR logistics departments and branches will be responsible for the unified supply of materials and general services to units within the battle zones. The reforms are focussed to provide unified leadership, planning, management of logistics resources and services to support joint operations. PLA has expressed interest in creation of more mobile logistics forces (two to three logistics support brigades per MR), rather than relying primarily on fixed depots and supply points.

Forward Stockpiling of War Materials. The PLA’s strategic war materials reserve system is concentrated inland and needs extensive reorganisation and relocation to coastal /forward regions.

Socialisation / Outsourcing and Privatisation of Logistics Functions

A major element of logistics reform is “outsourcing,” or contracting with local civilian entities to provide services previously performed by members or units of the PLA.11 The GLD and PLA are linking civilian and military logistics to provide, what the former Chairman of the Central Military Commission, Jiang Zemin called, “precision logistics.”12. PLA is testing such outsourcing activities in various operational exercises.

Centralisation and Automation of War Materials Supply System

Market mechanism system is being introduced to improve efficiency and to save on costs. The military supplies are being centralised, automated and reorganised to improve warehousing, distribution and procurement system during peace and war time periods. The effort is to make logistics management more professional and “scientific”; and to improve mobile logistics support for units away from their bases.13 Some of the areas selected for such improvements are:-

(a) **Computerisation.** PLA has been carrying out mock emergency procurement drills to test its new computerised procurement system with local suppliers in North East China (PLA Daily, September 26). The success of the exercise demonstrated that the system was viable and indicated the way for future “Integrated army-civilian emergency procurement systems.”14 PLA is also developing comprehensive capabilities of automatic identification that deal with logistics information e.g. bar code readers and radio frequency identification equipment

(b) **Integrated Command Platform of Field Logistics.** The Integrated Command Platform of field logistics connects the three Services in one network. In early May, a special support coordination exercise was organised by JLD under the Nanjing,

Military Area Command (MAC). In the exercise, commanders of the three Services were reporting and submitting demands, generating support plans, regulating and controlling material flows, and simultaneously commanding support actions in different areas through the command platform, showing the integration capacity of information systems.

Infrastructure Development

Peoples Republic of China has been carrying out extensive infrastructure development to improve its surface and air mobility to prosecute operations. Many key highways and railway lines have been developed to link developed coastal region to border areas. China's massive infrastructure development in Tibet Autonomous Region (TAR) is part of her overall economic as well as sectoral development plans which have military implications; besides, integration or Sinocisation of Tibet. Some strategists feel that, 'The infrastructure development is well beyond the genuine needs of 27 lakh people of Tibet'.15 With development of Quinghai Tibet Railway line (QTR), China has proved her resolve and capability of infrastructure development to the world. Hu Jintao noted, "The project is not only a magnificent feat in China's history of railway construction, but also a great miracle of the world's railway history."16 In TAR and areas close to Southern borders, China has undertaken extensive infrastructure development which indicate her resolve to ensure that the resultant economic development hastens the pace of integration of TAR with China. This will also provide impetus to PLA's logistics capabilities, to enhance its operational potential in TAR. The inhospitable terrain and extreme climate, however, restrict her capability in TAR.

The opening of rail link to Lhasa and trade route via Nathula, indicate China's mindset and emphasis on development of infrastructure and trade in India's strategic neighbourhood. It is significant to note that China is putting together a policy of engaging its periphery through a series of infrastructural developmental projects that provide her an easy access to energy sources, trade routes and access to warm waters from its landlocked Western region. The development of 'land and strategic energy corridors' through Pakistan, Myanmar, Bangladesh, Vietnam, and Greater Mekong Sub Region are part of the above strategy.

Research and Development

PLA is increasing scientific research on logistics equipment and making greater investments in R&D. Over the past few years, PLA has finalised the designs of 92 types of new generation special logistical equipment – some of the items match up to advanced international standards. In April 2004, more than 340 manufacturers from 26 countries, took part in the Fourth Beijing International Exhibition on Military Logistical Equipment and Technology Exhibition. Military delegations from 16 countries were invited to attend the exhibition as well as the international symposium on the development strategy of military logistical equipment and technology.17 These exhibitions and military exchange programmes contribute much in 'military diplomacy'. China has realised that development of indigenous production capabilities of high technology equipment and technological innovations are an inescapable necessity to sustain war effort in the future.

Logistics Training

PLA has a multi-dimensionnel system for logistics training with over 20 institutes. The

Logistics Command Acadamy is conducting training at theatre and operational level since 2000. PLA is sending large number of logistics staff officers for training in various reputed institutes abroad to achieve indigénisation, technological innovations and modernisation of production facilities. Logistics training exercises are also being conducted at all levels for all weather high-altitude support.

Logistics Support for Events of National Importance

PLA organises and provides logistical support for key national and international events with meticulous precision. Some of the examples are: The National Day Parade, Naval escort operations in the Gulf of Aden and waters of Somalia, joint exercises with foreign military forces, security work for the Shanghai World Expo and Beijing Olympics. China provides strong and reliable logistical support for rescue and relief operations following disasters, such as the Yushu earthquake and the Zhouqu mud-rock slide.18 These activities enhance the capabilities and confidence of PLA logistics system.

Assessment of Logistics Reforms

By creating the GLD and well defined, fast paced reforms under focussed leadership, PLA has come a long way to improve the effectiveness of its logistics system. While the reforms may be sufficient to support local campaigns, within or just beyond China's borders, they have not been focussed on extending expeditionary capabilities across oceans.19 The new systems and procedures are yet to be war tested. PLA units still lack high-mobility transportation assets for power projection missions. The synergy between the joint system is also suspect due to some resistance from ground forces towards integration.

With China's main strategic focus towards South and East China Sea, PLA would like to achieve logistics capability to intervene militarily to protect its energy supplies and to have an effective deterrence capability to safeguard national interests. It would take some time for China to be able to support a decisive large-scale war well beyond her borders. PLA has been quite successful in developing a modest modern conventional force projection capability in her periphery. The following factors have strengthened their logistics system:-

(a) Unified command and control of logistics resources.

(b) Focussed leadership, determined to push through the reforms.

(c) Sizeable budget for modernisation.

(d) Policy of combing around the world to acquire military knowhow and equipment.

(e) Well developed industry for production of military hardware, oriented towards export.

(f) Their will and ability to mobilise civil resources during emergency.

(g) Their focus, determination and ability to fast track infrastructure development.

(h) Improvement in availability of resources in border areas in recent times.

Analysis of PLA's Logistics Capabilities

(a) Strategic and tactical mobility for operations beyond China's borders is consistently increasing with induction and integration of civil transportation resources.

(b) PLA is purchasing heavy lift assets from Russia for moving their formations and heavy assets to outlying provinces, including Fuzhou (which can be used as a platform to invade Taiwan).20 By 2012, the Chinese defence industry will replace foreign-purchased ships and aircraft.

(c) China does not have a blue water Navy and has limited amphibious capability. A large number of ocean going transport ships and airliners can be interfaced to enhance rapid sea lift/ air lift capability.

(d) The present logistics capabilities are limited; however, if the current pace of military modernisation is maintained, PLA may be in a position to invade Taiwan by 2015.

(e) High priority has been accorded for sustained logistics support for RRF operations on her periphery and beyond.

(f) Land based transportation capability is increasing at a fast pace due to rapid development of road, rail and air transportation infrastructure.

(g) Socialised support network, civil infrastructure and resources have been integrated to make military logistics system efficient, responsive and cost effective.

Analysis of PLA's Logistics Capability vis-à-vis India

China faces no major constraints in inducting forces required for conventional operations. It can use the three highways, railways and air transportation for moving forces up to major townships near the Indian borders. No additional acclimatisation period is required because induction of Chinese forces in TAR is spread over a long time. Lack of deployment space and capacities for maintenance of tracks along likely places of deployment restrict the overall force levels needed for launching operations speedily. Application of forces along Indo-Chinese borders will continue to be restrained by terrain, extreme climate and limited campaigning period. Application of RRF along the Indian borders would require ground based logistics support suited for mountain warfare. Air operations will continue to be affected by problems related to high altitude factors, although PLA is trying to mitigate it by air to air refuelling capabilities and other measures.

Applicability of PLA Logistics Reforms to Indian Military Logistics System

PLA undertook logistics reforms to keep pace with China's future goals, strategic focus and doctrinal and organisational changes. A large number of them would be applicable to the Indian Armed Forces in varying forms.

Integration of Defence Logistics

PLA, as well as most defence forces in the world, have shifted emphasis from 'service specific' to 'joint' logistics systems and have economised their logistics investments and efforts. In the Indian Armed Forces, bulk of the logistics continue to be service

specific. We need a 'Defence Logistics Agency' for higher direction, control and co-ordination of logistics effort within the three Services headquarters to provide an interface with other logistics agencies in the country. It should project the logistics perspective plan and forge close co-operation between defence research and development, defence production, public and private sectors.

Need for Revolution in Military Logistics in India

PLA has justified the saying, "There can be no worthwhile Revolution in Military Affairs (RMA) without worthwhile Revolution in Military Logistics (RML)." The RML intends to transform logistics system to ensure that the right stuff reaches the right place at right time, for best value. While Indian Armed Forces are also undergoing logistics reforms,some of the areas which we need to look at are as under :-

(a) **Mobilisation.** Establishing National Defence Mobilisation Committees at grass root level for involving the civil sector, population and reservists for speedy mobilisation. Due to advances in Information Technology in India, Cyber mobilisation platform can also be adopted.

(b) **Theatre Logistics Command System.** We can think of having 'theatre based' logistics system for establishing a 'grid pattern' logistics infrastructure, which could support all elements of the Defence Forces, including the Para Military Forces.

(c) **Enhancing Indigenisation and Defence Production.** To ensure that National interests are not compromised, we need to be self-reliant in defence production. Defence production should be export oriented to enhance our surge capabilities to cater for fast paced, short duration wars.

(d) **Defence-Industry Partnership.** Confederation of Indian Industry (CII) could be a forum for closer interaction and synergy between industry and defence logistics. It would ensure close cooperation between development and production in the defence, public and private sectors. We need to adopt 'partnership' approach with the industry.

(e) **Absorption of Technology.** We should increase the pace of absorption of state of the art technology, IT and scientific management techniques for better cost effectiveness. There is a need to improve the Research and Development capabilities for Defence Technology, specially by incorporating the private sector also.

(f) **Logistics Training.** We need more formalised institutes for logistics training to nurture logisticians as specialists.

Infrastructure Development in Border Areas

The Indian Armed Forces should formulate a broad framework for infrastructure development specially in border areas and pursue it vigorously in conjunction with civil agencies. The pace of infrastructure development in border areas has been very slow due to fallacious reasons. We need to ensure that the current asymmetry between India and China, in terms of infrastructure development in border areas is reduced. There is also a need to encourage development of civil infrastructure in border areas to include land and air communications, tourism, adventure activities, agriculture, poultry, dairy, and civil cooperatives.

Conclusion

Considering logistics as an important force multiplier, PLA has fast tracked its logistics reforms. The measures undertaken by them will enable China to sustain independent operations beyond its borders and enhance her power projection capabilities. Infrastructure development along India-China borders, coupled with other strategic and operational parameters, will improve the PLA soldiers quality of life, morale and capability to wage war.

Realistic analyses of China's logistic capabilities along our borders should compel the Indian Armed Forces to pursue its logistics and infrastructure development plans vigorously to ensure that we do not lag behind them.

Endnotes

1. Peoples Daily online: Precision Logistics; Focus of PLA logistics Changes. Accessed on 20 Jun 2011

2. Dennis J Blasko China Brief,, Chinese Military Logistics: The GLD System, 11 April 2004, pp 2

3. CK Kapur, Chinese Military Modernisation, Manas Publications, 2003, Chapter 10, pp 149.

4. Dennis J Blasko, loc cit, pp3

5. Cheng Kuaile and Zhang Ping, "Precision-Oriented Logistics: Objective of (the) Logistics Revolution in the 21st Century, Zhongguo junshi kexue, 20 November 1999, translated in FBIS, 4 February 2000.

6. Sinodefence.com/overview/organization/gld. General Logistics Department : Accessed on 21 jun 2011

7. David A Payne, Army Logistician : Chinese Logistics Modernisation. Vol 140, Issue 4, Jul-Aug 2008, pp1

8. Ibid.

9. US Department of Defence Annual Report on the Military Power of the People's Republic of China, dated June 2000.

10. International Institute for Strategic Studies, The Military Balance, 2003-2004, (London: Oxford University Press, 2003), p. 155.

11. CK Kapur, loc cit, pp 152

12. Peoples Daily online: Precision Logistics; Focus of PLA logistics Changes. Accessed on 20 Jun 2011.

13. Lonnie Henley, "PLA Logistics and Doctrine reform, 1999-2009," in Susan M Puska, ed., People's Liberation army After Next (Carlisle, PA: Strategic Studies Institute, US Army War College, 2000), pp. 55-77

14. Modernising PLA Logistics, China BiefVolume : 5, Issue: 25, December 6, 2005.

15. Times of India, November 7, 2007.

16. Abanti Bhattacharya, Strategic Implications of the Qinghai-Tibet Railway, July 07, 2006.

17. English.chinamil.com.cn 2008-03-17: Chinese Military : Open and Transparent, Revolution in Military affairs with Chinese characteristics), PLA Daily: 17 March 2008.

18. Multilateral Approach to Building a Modern Logistics System: China's National Defence in 2010, English.news.cn 2011-03-31 11:16:43

19. Dennis J Blasko, loc it, pp 4

20. David A Payne, Army Logistician : Chinese Logistics Modernistaion. Vol 40, Issue 4, Jul-Aug 2008.

***Major General SB Asthana, SM, VSM** was commissioned into Assam Regiment in Dec 1978. As Senior Fellow at USI (2005-06), he published the monograph 'Military Implications of Chinese Developments in Our Strategic Neighbourhood'. Presently, he is Addl DG Infantry, Integrated HQ of MOD (Army), New Delhi.

Journal of the United Service Institution of India, Vol. CXLI, No. 586, October-December 2011.