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Modernisation of the Chinese Air Force and its Implications for India

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Over the past three decades, China has evolved into a robust economic powerhouse, surpassing Japan to become the second largest economy. The effects of this economic prosperity are visible in the leapfrogging modernisation of the People's Liberation Army. The People's Liberation Army Air Force has been designated as a strategic arm of the People's Liberation Army and is equipping itself with the fourth and fifth generation aircraft, force multipliers and precision guided long range air defence systems. The wide network of airfields in the regions close to the China–India border can facilitate rapid force mobilisation. The evenly spaced out airfields in Tibet particularly, have the potential to render the formidable natural Himalayan barrier ineffective in case of a contingency. A modernised People's Liberation Army Air Force deployed close to the Indian border may act as a counter force in offsetting any gambit that India may adopt in the Indian Ocean.

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Introduction

China has been relentlessly pursuing its ambitions of emerging as a major power since it decided to embark on a unique growth pattern of four modernisations[1] implemented by Deng Xiaoping in late 1970s. While the Chinese Comprehensive National Power (CNP) grew on account of the first three components of modernisation – agriculture, industry, and science and technology – it created an opportunity for laying considerable stress on the fourth aspect of national defence modernisation since the turn of the twenty-first century. China has been pursuing a three-step development strategy[2] for modernising its armed forces. These envisage laying a solid foundation by 2010, making major progress around 2020 and reaching the strategic goal of being able to win wars under conditions of "informationisation"[3] by the mid-twenty-first century, in that order. The Chinese official defence budget started showing a consistent double digit growth and the unofficial estimates pegged it even higher, at about 2–2.5 times higher.

The Chinese Defense White Paper of 2004 indicated for the first time that the People's Liberation Army (PLA) seeks to shift focus from a predominantly defensive position to that of calibrated power projection by strengthening the capabilities of the PLA Navy and the PLA Air Force, so as to win command of the sea and air, and also to carry out strategic counter-strikes.[4] Since then, the direction of the current PLA modernisation programme is to vastly improve the capabilities of its Navy and the Air Force in order to achieve the above capability in a compressed time frame.

This paper will cover certain key elements related to the PLA Air Force (PLAAF) modernisation, manifestation of the same in the region of immediate relevance to India and the likely impact of such modernisation on the broader Indian security perspective.

Modernisation of the PLA Air Force

The PLAAF has gradually shifted from territorial air defence to both offensive and defensive operations. Accordingly, the modernisation of the force is following a well structured plan wherein the combat force structure is being transformed to focus on air strikes, air and missile defence and strategic projection, all built on an informationised and networked support system.[5] Efforts are being made a build an effective air force which is appropriate in size, sound in organisation and structure,

advanced in weaponry and equipment and possessing integrated systems and a complete array of information support and operational means. PLAAF's leadership, doctrine, organisational structure, weapon system, personnel and education and training have witnessed substantial reforms in recent times.

Brief Profile of the PLAAF

The PLAAF is responsible for safeguarding China's airspace security and maintaining a stable air defence posture nationwide. It has an estimated strength of 315,000 active duty personnel.[6] While it is fairly large in numbers, until recently it lacked in terms of modern technologies and actual operational experience. It has in the recent past been making efforts to overcome these deficiencies in order to be able to project itself as a strategic force of the PLA. The PLAAF Headquarter is located at Beijing, under which seven Military Region Air Force Headquarters (MRAFs) are placed. PLAAF also has one airborne corps under its control. The Air Commands are at the next lower levels, which are activated on an as required basis. The PLAAF at present has 29 Air Divisions.[7] Certain Air Divisions are positioned under each Air Command. The deployment pattern of these Air Divisions suggests a clear emphasis towards Japan, Taiwan and the South China Sea as 19 Air Divisions are stationed in the four military regions closer to the Chinese east coast. Six Air Divisions are positioned in the military regions which are in close proximity to India. Each Air Division consists of 80 to 130 aircraft, depending on the role and the type. They are organised into three Air Regiments per division.

Force Level[8]

The 15th Airborne Corps of the PLAAF is composed of two airborne divisions. The airborne troops are accompanied by a transport division of the PLAAF. The airborne troops are directly under Central Military Commission (CMC) control. Strategically the airborne troops are considered to be a reserve force, yet in tactical terms the airborne troops are deployed as an advance force. This force could be reconstituted as an air mobile rapid attack force. The airlift would be provided mainly by IL-76 heavy lift aircraft, Y-7 and Y-8 transports. The present capability to lift troops is estimated at transporting more than a division and airdrop a brigade. The strategic capability of the airborne force in conventional conflict still remains highly debatable.

Table 1. Force level.

Equipment	Inventory	Types
Aircraft	2446	1687 Combat worthy
Aircraft, airborne early warning	12	KJ 2000, KJ 200
Aircraft, bomber	82	H6,
Aircraft, electronic warfare	10	Y8 AEW&C, TU154
Aircraft, fighter	1383	J7, J8, J10, J11/J11B SU27, SU30, JF17
Aircraft, reconnaissance	120	Y8
Aircraft, surveillance	3	Y8
Aircraft, tanker	18	Modified H6U
Aircraft, training	490	CJ 6/6A/6B, K 8, J 7
Aircraft, transport	296	IL76, Y7, Y8
Helicopters	80	Z8, Z9, Mi 17
Unmanned aerial vehicles		ASN07, Harpy, Ch1
Air defence weapons	16,600	
Air defence guns	16,000	85 mm, 100 mm
Air defence surface to air missiles	600	HQ7, HQ9, S300, 300PMU

Salient Aspects of PLA Air Force Modernisation

In June 2004, at the Congress of the Chinese Communist Party, the PLA leadership passed a resolution that the PLAAF would be upgraded to a strategic force. This would indicate a significant shift in PLAAF doctrine and operation planning. In addition to the acquisition of fourth generation aircraft, AWACS, aerial refuelling, air defence systems, C4ISR (command, control, communications, computers, intelligence, surveillance and reconnaissance) equipment, intelligence, surveillance and reconnaissance (ISR platforms), modern missiles and anti-missile weapons, electronic counter measures, information operations and Air Force automated command systems are being procured/produced and integrated.

Hardware

The PLAAF's capabilities have improved significantly over the past 10 years. China has adopted a two-pronged strategy to upgrade its aircraft fleet. It is modifying its

older generation aircraft and acquiring newer generation aircraft with transfer of technology in key areas.

Fighter Aircraft

Except for the Su-27s and Su-30s received from Russia, the domestically produced aircraft were not equipped with 'beyond visual range' (BVR) missiles. China's electronic warfare capabilities were minimal as well.[9] This has therefore been an area of key focus for enhancing battlefield performance. The PLAAF now boasts of indigenously manufactured J-10 and J-11/J-11B aircraft as the mainstay of their 'Air Superiority Fighter' force and has been striving to achieve total self sufficiency in their production by carrying out extensive tests on their indigenous WS10A aircraft engine.

Bombers

Development of strategic bombers has been progressing after the upgradation of the H-6 bombers (derivative of Tu-16), which can now carry air-launched cruise missiles (ALCMs). The new bomber programme could be inspired by the B-2 stealth bombers and is, therefore, expected to incorporate stealth technology.

Airlift

The size of the PLAAF's tactical airlift inventory is still limited, though with the ongoing development programmes on transport aircraft like the ARJ 21 and the C919 jets succeeding and expected progress on the IL76 acquisition deal, the capability may receive a quantum increase in the current decade.

Surveillance and Reconnaissance

China's ability to conduct surveillance of airspace and provide early warning of airborne attack has actually increased with the development of airborne early warning (AEW) aircraft and extension of the air intelligence radar network covering the entire country. Currently China has four active programmes in the development of airborne warning and control systems (AWACS). The first AEW programme consists of a Y-8 airframe with a radome in the nose. Another version of Y-8 supports a beam shaped Phased Array Radar on top. The third version has a rotodome on top of a Y-8. One aircraft of this type was also sold to the Pakistan Air Force as the ZDK-03 in

November 2010. The fourth version is based on an IL-76 airframe and is called the KJ-2000. It is envisaged that such roles will also be supplemented by unmanned aerial vehicles (UAVs) and reconnaissance satellites.

Air-to-Air Refuelling

The existing aerial capability of PLAAF is limited to 10 H-6U (copy of Tu-16) indigenously modified refueller aircraft and six Y-8 aircraft. PLAAF's refuelling capability is severely restricted since the IL78 based aerial refuellers are not yet available and the modified H6U refuellers can only refuel J-8 and J-10 aircrafts, but are not compatible with the Sukhoi fighters.[10]

Air-to-Air Missiles

China has traditionally depended upon foreign technology to develop as well as equip themselves with precision-guided ground attack weapons and air-to-air missiles (AAMs). They have imported Russian and South African technology to produce fifth generation AAMs and have equipped their aircraft with the 70 km range PL-12 AAMs. Besides, the PL-10 with 20 km range and the PL-8 and PL-9 have shorter ranges than the other AAMs. The infrared search and tracking systems such as the OLS -30, which can passively search for targets up to 70 km, support these AAMs while maintaining radar silence. China is also interested in the ultra-long range AAMs with a range of 300 km which are intended to counter the AWACS of the opposing forces.

Air Defence

In 2000, other than four battalions of Russian-made S-300 (SA-10B) systems, the bulk of the PLAAF's surface to air missiles (SAMs) consisted of modernised versions of the 1950s era SA-2 supplemented by a domestically produced version of the short range French Crotale system. Currently, the total number of missiles in the PLAAF's SAM inventory has more than doubled. The S-300 (100 km range) system has been supplemented by the more capable S-300 PMU1 (150 km range) and comparable domestically produced HQ-9, along with at least eight battalions of the even more advanced S-300 PMU2 (200 km range). A battalion is expected to contain 36 to 48 missiles.

Force Accretion

Some details of the ongoing PLAAF force accretion efforts are as follows:

- **J-14**: this multi role combat aircraft is likely to become operational by 2014.
- **J-15**: the J-15 has been developed by reverse engineering the T-10K, a Su-33 prototype, provided by Ukraine. There are though certain problems with regard to the folded wing system and the unreliability of the indigenous "Taihang" WS-10A jet engine proposed for the J-15. However, China contends that it has resolved the problems with the flight control system of the J-15 and carried out the first test flight at the end of 2010. China reportedly has plans for batch production of this aircraft commencing June 2013. The aircraft could finally form the air wing for the Varyag aircraft carrier, which would be operational by then.
- **Su-35**: the PLAAF is also negotiating with Russia to acquire the Su-35, which is basically an improved Su-30 with better engine and radar and can employ long range weapons such as the KS-172 anti-radiation missile. This programme is currently not making much headway.
- **Tu-22M3**: China is also making bid for the Tu-22M3, a strategic bomber being mothballed by Russia, perhaps for requisite technological inputs to develop its own strategic bomber.
- **J-20 stealth aircraft**: the existence of China's fifth generation stealth fighter programme was confirmed when the aircraft designated as the J-20 was sighted undergoing ground taxiing trials at Chengdu Aircraft Design Institute in December 2010. The prototype subsequently carried out its maiden test flight in January 2011. The twin-engine J-20 appears larger than either the Russian or US fighters, potentially allowing it to fly farther and carry heavier weapons. The supersonic cruise capability and large fuel capacity of the J-20 would permit it to be exploited in various roles like the long range air combat and escort fighter/interceptor, theatre strike fighter using guided conventional or nuclear bombs, long range theatre reconnaissance aircraft, electronic attack platform or as the anti-satellite weapon launch platform. The aircraft could also be based deeper inside China's territory, compared to older types of aircraft. The aircraft is likely to be more capable than the US JSF-35 and will possibly outclass and outperform all the fourth generation fighters. This

superior aircraft is in the league of the US F-22 Raptor and the Russian T-50 PAK-FA. An Australian assessment considers that the J-20 aircraft, if deployed in large numbers in a mature configuration, could cause a genuine strategic coup against the United States.[11] It assesses that in the current scenario there are no air defence systems in the world, including with the US Navy Carrier Battle Groups, which can reliably stop a mature long range super-cruising stealth fighter.[12] China claims that it will be able to induct the aircraft into PLAAF by 2018.

Infrastructure

The effectiveness and efficiency of the PLAAF hardware and equipment will increase manifold if it is supported suitably by the associated infrastructure. In this regard, the availability of well equipped airports/airfields, comprehensive aerial reconnaissance network and the technological knowhow generated through the civilian aviation sector will play a very important role.

Airports/Airfields

An important aspect of PLAAF modernisation devolves around the ability to deploy the aviation assets effectively in the relevant areas of interest. This requires an extensive network of airports and airfields across the Chinese territory. China presently has 562 airfields and there are plans to build another 97 by 2020. The airfields in Lanzhou and Chengdu Military Regions (MRs) are of particular significance as they adjoin India and the infrastructure development in these regions has direct security implications for India. There are a total of 42 military airfields in these two MRs, with 23 in Lanzhou and 19 in Chengdu. Out of these, 30 airfields are within 1200 km of the international border. Seventeen of these airfields have military aircraft permanently deployed whereas 13 can be activated at short notice.

The airfields closer to the Indian border in Tibet and adjoining areas are, however, of more immediate concern. There are 10 airfields in this region of which five functional airports are in Tibet itself. Lhasa, the capital, is serviced by an international airport at Gongga, about 50 km to its south. The Qamdo (Bangda), the highest airfield in the world, located at 4300 metres above sea level has been expanded

to enable the operation of larger aircraft. China commissioned an airport at Nyingchi (Linzhi) in October 2007. This airport, at a much lower altitude of 2950 metres above sea level, is equipped with night landing and all weather facilities. The Gunsa Airport in north-west Tibet, construction of which commenced in May 2007, became operational on July 1, 2010, as the fourth civil airport in Tibet.[13] In April 2009, the construction of another new airport in Xigaze, the second-biggest city in Tibet, commenced. Work on the airport, at an altitude of 3782 metres and designed to handle about 230,000 passengers and 1150 tonnes of cargo annually, has been completed. It formally opened for commercial operations on July 8, 2011, with Air China commencing tri-weekly flights from Chengdu.[14]

The PLAAF has not deployed any squadrons on permanent basis in any of these airfields. However, they have all basic infrastructure and can be activated for a military role if required. The PLAAF routinely operates from Lhasa Airfield from July to October every year for fair weather deployment and training.

The other five airfields located close to the Tibetan periphery are Kashi, Korla, Yushu, Kangding and Chengdu. The capability of Chinese force projection and subsequent sustenance of operations through timely logistic replenishments would grow manifold when these airports are exploited in tandem with those further inland. It formally opened for commercial operations on July 8, 2011, with Air China commencing tri-weekly flights from Chengdu.

Air Defence/Air Surveillance

The enhancement in air defence capabilities is being accompanied by improvements in the air space surveillance coverage and integration through air intelligence radar network which aims at covering the entire country. The air defence radar coverage of the area closer home in Tibet is reasonably comprehensive.[15]

Civil Aviation Sector

The Chinese civil aviation sector has been a great contributor to the indigenisation and self reliance effort of PLAAF aircraft and the associated equipment. The assembly line for the Airbus 320 aircraft has been established in Tianjin wherein these complicated machines are being assembled with indigenously manufactured parts like the wings and airframe components. China has been indigenously striving to build the medium size commercial aircraft C919 and the ARJ21 regional jet. The C919 has

a range of 4075 km and has a designed capacity of 168 seats. The aircraft is likely to carry out trial flights in 2014. On the other hand, the ARJ21 regional jet undergoing advanced trials prior to commercial production has a standard designed range of 2225 km and can carry 90 seats. China has an ambitious plan for producing 20 C919 planes and 50 ARJ21 jets every year by 2016.[16] All these efforts are providing the much needed inputs to augment the PLAAF's logistical airlift capabilities.

Doctrine, concepts and procedures

The doctrine, tactics and procedures of the PLA Air Force all emanate from a combined PLA's military strategy of ''Active Defense''. ''A Military Strategic Guideline of Active Defense for the New Period'' has been formulated to achieve the same.[17] The guideline strives to increase the PLA's capabilities to accomplish tasks such as counter-terrorism, stability maintenance, emergency rescue and international peacekeeping. ''Military operations other than war'' (MOOTW) are one of the important goals and tasks of the Chinese national defence policy.[18]

Major doctrinal changes were incorporated in the PLAAF's doctrine in 1999, replacing those that had not changed for more than 20 years. This led to revision of the training concepts in 2001. PLAAF doctrine advocates use of force as part of active defence. The PLA's science of campaign lists air strikes and airborne operations as important aspects of offensive power projection. In 2004, the Central Military Commission approved the PLAAF's role in the PLA's strategic action plan and the PLAAF has designated it the Integrated Air and Space Plan. China's 2008 National Defence White Paper suggests that the PLAAF may additionally have a mission of ''strategic projection.'' This must be seen in the context of the categorical assertion in the 2004 Defence White Paper that future border war would be fought through ''the command of the air,''[19] a term that has not been used even by the US Air Force. This doctrinal shift has also led to improved air defence effort, manifested mainly in the increased ranges and capabilities of the Chinese SAM based air defence systems like the S300 PMUs.

Manpower

The PLA Air Force, as part of its ''talent training project''[20] launched in 2003 has signed agreements with 16 civilian higher learning institutions since 1999 for raising the technical skill level commensurate with various aspects of modernisation

mentioned above. The PLAAF, as part of the greater PLA, used to recruit 18–20 year old men and 18–19 year old women, but China's State Council revised the recruitment regulations in September 2001 to enlist college students for the first time.[21] The age limit for recruitment in 2009 was raised to 24 for those with graduation degrees.

The Chinese Ministries of Education, Finance, Public Security and the General Staff department of the PLA have also jointly offered very attractive incentive policies to encourage fresh college graduates to join the armed forces. These incentives include subsidies to cover their tuition fees, priority in the enrolment examinations for admission into the colleges of politics, law and public security, and a chance to pursue higher learning courses like post-graduate courses without taking the mandatory entrance examination, on demobilisation.[22]

Salaries of the PLA personnel were doubled in 2006 after about 20 years. These were further increased in March 2009, thus bringing the pay of military personnel to about 20% higher than the civilian government officials of equivalent grade.[23]

However, the PLAAF's biggest challenge today is to integrate technology and skilled manpower. Training of PLAAF pilots has always been considered to be a grey area. The majority of PLAAF pilots are believed to average less than 100 hours of flight training annually. Even the exercises are highly scripted, with predetermined outcomes. Virtually all officers in the PLAAF are either graduates of PLA run military academies – where the quality of education is generally not vigorous enough – or have been directly promoted from the enlisted ranks without receiving a higher education.[24] However, this has been changing since 2003, when the PLAAF extended the recruitment to civilian college graduates with specific degrees. These graduates receive two years of flight training at the PLAAF flight academy and one year of transition training before being assigned to an operational unit. This is indicative of a higher quality of intake from a wider base entering the operational force. In June 2011, the PLAAF recruited around 200 pilot trainees from 143 military and civil universities during its annual recruitment programme.[25] These trainees are still pursuing bachelor degrees, but have been provisionally admitted to the Aviation University of Air Force.

Regarding experience, whereas almost every PLAAF leader in the 1980s had fought in the Korean War, they had all retired by the mid-1990s.[26] This leaves the

current set of leaders without any combat experience. Although they have carried out detailed studies of the Gulf and Kosovo wars and drawn lessons, the question remains as to whether they can implement the changes necessary to meet the challenges of local wars under high technology conditions.

All these new initiatives are expected to improve the military structure in terms of the skill set required for optimising performance in times of modern warfare.

Implications for India

The consequences of the PLA Air Force modernisation may be of immediate concern to the Western Pacific littorals. However, the Chinese Air Force being billed as an instrument for ''strategic projection'' provides compelling background for expanding its reach outwards.

PLAAF Across the Land Border

The greatest area of concern for India should be the five functional airfields in Tibet. The spread of airports at nearly uniform intervals, extending right from north-west to south-east, across the Tibetan landscape has obvious security implications for India. This network of airfields is capable of operating large civil aircraft, ostensibly for handling increased tourist traffic in future. However, the infrastructure raised for civil usage can always be put to equally good military use. Though there are no reports of the PLAAF units being permanently stationed in Tibet, the annual deployment of PLAAF fighter aircrafts for training and area orientation during the fair weather is providing familiarisation training to PLAAF pilots.

Nyingchi airfield, located just 40 km from the contested India–China border in Arunachal Pradesh, and the Gunsa airfield, lying only 90 km from the disputed territory in northern sector, can really be instrumental in rapid force build-up in these sensitive areas. The situation tends to becomes more intricate when viewed holistically along with other infrastructure projects like the Qinghai–Tibet Railway and the associated military support base being established around the airfields. All the above airports are in close vicinity of major military garrisons and there are reports of air defence missile batteries being set up around some of these airfields.

Implications for India along the Border

Though there are reports of the Indian Air Force (IAF) reactivating some old airfields in the northern and the eastern sectors and the integrated border roads construction project is in progress, these measures are not adequate enough when compared to the scale of Chinese infrastructure development across the border.[27]

Two particular aspects of the PLAAF's modernisation that have the maximum potential to affect the power asymmetry for the Indian Armed Forces are the advanced air defence based on long range SAMs and a fourth generation air force with precision air-to-ground and air-to-air capabilities. These upgrades may facilitate effective airspace denial of those portions of battle space that may be of vital interest for the IAF. When the air defence umbrella over Chinese territory is quite saturated with modern SAMs and fighter aircraft, the airspace of possible engagement is likely to get extended from over the Chinese territory towards the Indian Territory.[28] Although the IAF is probably well trained and equipped to deal with fourth generation fighters and modern SAMs, the combination of capabilities that China appears to be creating could cause significant additional risk for India.[29]

Further, it is logically presumed that the PLAAF will not operate alone in the battle zone. The strategic missile forces are likely to operate in tandem with the PLAAF and may be used pre-emptively to soften the adversary. PLAAF assets will most certainly also be used in the ground support role. Though altitude limitations, insufficient pilot training and lack of significant combat experience may be the current limiting factors for the PLAAF, the commissioning of lower altitude airfields in and around Tibet will enable almost permanent stationing of PLAAF aircraft. The deployment duration of fair weather training is being incrementally extended every year. This will plug the shortcoming of inadequate training. The eventual acquisition of modern force multipliers like the IL78 refuellers will increase the operational range of the combat aircraft and also overcome the load penalties associated with the high altitude. The IAF will have to factor these aspects into its future operating plans.

Conclusion

The Chinese have always maintained that the Indian Ocean is not an ''internal lake'' of India. This premise is the basis for them to keep their options well open

on the Indian Ocean Region (IOR) front. The active participation of Chinese defence forces in MOOTW has also seen them deploying their ground forces in various UN mandated peacekeeping missions, including about 1500 deployed in different African countries. In addition, the PLA technical reserve troopers are carrying out mineral, metal and oil exploration, infrastructure development and humanitarian assistance activities in Africa. The PLA Navy ships are also present in the maritime proximity as part of the ongoing anti-piracy effort. The PLA Air Force has started demonstrating its strategic reach by conducting distant area exercises with countries as far as Turkey. It has also shown its capability to carry out missions in support of its overseas workers and diaspora. A precedence of this kind was set by the PLA Air Force by deploying its IL-76 transport aircraft to Libyan and the other proximate airfields at the end of February 2011 to work alongside the civilian evacuation effort of more than 35,000 Chinese citizens from the crisis zone. These PLA activities imply an unstated security assurance for the Chinese diaspora by engendering a notion that their Air Force and the Navy will come to their immediate assistance, should the need so arise. On a reciprocal assumption, it is not inconceivable that China could also mount an urgent, small scale and localised joint operation involving its Navy and the ground force components present in the region and supported logistically by its Air Force, during a crisis involving its national interest.

Closer to home, the modernised PLAAF will most certainly play a major part in the case of an across the border contingency. There is adequate concern amongst the Chinese leadership about its energy sea lines of communication (SLOCs) in the IOR being interdicted possibly by the United States alone or by United States in coordination with India. A powerful PLA with its ground forces arrayed across the border and backed by the modernised PLAAF and enabling infrastructure will possibly be able to provide the counter force and safety insurance against any intended US, Indian or the combined US/Indian gambit in the IOR SLOCs.

It is therefore imperative that a detailed rethink about the security implications of the Chinese infrastructure in Tibet – especially in light of the progressively improving air connectivity – be carried out, so that suitable response strategies and options for future courses of action may emerge.

Notes

1. The concept of ''four modernisations'' was propounded at the third National Peoples' Congress in December 1964, and gained traction only during the stewardship of Deng Xiaoping. See Immanuel Chung-yueh Hsü, *China Without Mao: The Search for a New Order* (New York: Oxford University Press, 1990), p. 93. Available at http://books.google.co.in/books website (accessed June 11, 2011).
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3. The term ''informationisation'' describes China's military effort to incorporate modern technology into all aspects of operations and includes means to protect one's own information such as own command and control systems and the means to disrupt the information of the adversary such as cyber-attacks and electronic jamming. See U.S. Office of Naval Intelligence, *The People's Liberation Army Navy: A Modern Navy with Chinese Characteristics*, July 2009, p. 7.
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15. Centre for Air Power Studies, New Delhi, Research Project on ''Military Asymmetries between India and China and Mitigating Strategies–2022,'' December 14, 2010, p. 67 and diagram at p. 137.
16. China Daily, ''Shanghai Builds China's Largest Civil Aircraft Final Assembly Base,'' December 29, 2009. http://www.chinadaily.com.cn/bizchina/2009-12/29/content_9242200.htm (accessed September 30, 2011).
17. This guideline aims to win ''local wars under conditions of informationisation'' by way of joint operations, training and support, optimising the force structure and composition, and building the capabilities suitable for such warfare. It professes close coordination between military actions and diplomatic, economic and legal efforts towards attainment of the same aim. See Ministry of National Defense of Peoples Republic of China, ''White Paper on 'China's National Defense in 2008','' Section II: National Defence Policy. http://eng.mod.gov.cn/Database/WhitePapers/2009-07/21/content_4006236.htm (accessed January 16, 2012).
18. See Ministry of National Defense of Peoples Republic of China, ''White Paper on 'China's National Defense in 2010'.''
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