



## Centre for Air Power Studies (CAPS)

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# CHINA'S AIR POWER DEVELOPMENT PROGRESSES

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### Introduction

Peoples Republic of China (PRC) has traditionally fielded a large but mostly obsolete air force in terms of equipment and operational philosophy. There have been consistent efforts by the PRC, since the Gulf War of 1991, to upgrade the equipment as well as operational capability of the Peoples Liberation Army Air Force (PLAAF). This aspect merits an examination and analysis.

### Development of China's Air Power

The PLAAF can trace back its history to the year 1924<sup>1</sup> when the Air Wing was formed at the Huangpu Military Academy and the first batch of 50 pilots were inducted and commenced training with Soviet assistance. 18 pilots of this first batch were sent to the Soviet Union for training<sup>2</sup>. This early beginning did not give any major advantage as China required to import all her aviation equipment due to a non-existent domestic aircraft industry at the time. In due course,

during the 1920s and 1930s<sup>3</sup>, domestic aircraft manufacture commenced in collaboration with foreign companies<sup>4</sup>.

The utilisation of aircraft remained a weak area and later during the Japanese invasion and occupation of China from 1937 till 1945 the then Chinese Air Force was easily outclassed by the Japanese aviation service in all respects<sup>5</sup>. The PLAAF was formed in its current form in 1949 after establishment of the Communist PRC. Since then the PRC has invested heavily in a domestic aircraft industry. This endeavour was initially assisted by the USSR. PRC built several Soviet aircraft under license and obtained training and education from the Soviets in aviation. As progress started to be made the ill-conceived "Great Leap Forward"<sup>6</sup> was initiated by Chairman Mao followed by the "Cultural Revolution"<sup>7</sup>. These two disastrous, for China, events coincided with the rupture in relations between PRC and the USSR. The "Great Leap Forward" and "Cultural Revolution" combined with the rupture

in Sino-Soviet relations served to cut China off from all outside inputs of high technology<sup>8</sup>. China was now forced to reverse engineer the Soviet and other equipment it already had in the country to make do for its defence needs. The result of reverse engineering old Soviet era equipment was the mass production of old designs after understanding their technology. This resulted in the PRC fielding a large fleet of obsolete aircraft and associated equipment. This large fleet of obsolete aircraft was at the time to be utilised according to an outdated operational philosophy based on the land centric “Peoples War” strategy. This situation continued well into the 1980s when, with economic opening to the outside world, the PRC was able to access some civil and some dual use technology from the West. This period did not see any major change in PRC’s aerial capabilities as the new technologies obtained by it were being assimilated and tested for use in the military realm. The Gulf War of 1991 was an eye opener for the PRC and PLAAF. The PLAAF and Peoples Liberation Army (PLA) saw a military force, equipped and trained on similar lines to themselves; being destroyed in quick order with apparent ease by the US led coalition.

The PRC, PLA, and PLAAF carried out considerable introspection to derive lessons from this war and then started to implement their understanding that modern air power would be required to be developed by any means. A major effort to assimilate modern

equipment commenced with some imports from Russia, cooperation with friendly countries such as Israel, application of civil technologies with use in military projects to new military aircraft and traditional as well as cyber espionage where other means of technology acquisition failed. This effort started to show results due to the single minded focus brought to bear by PRC. Legacy aircraft were fielded in upgraded and enhanced variants while major reworking of old designs for greater capability were achieved. A prime example of this is the Chinese FC-1 / JF-17 which is a heavily modified development of the old MiG-21 design with vastly improved performance<sup>9</sup>. Totally indigenous designs such as the J-10 also emerged and through sustained and dedicated effort were developed to a level where they were comparable with their contemporary fighters from more advanced countries in western Europe, the US and Russia<sup>10</sup>. Reverse engineering continued alongside with domestic variants of the Soviet Su-27 being fielded as the J-11B, the J-11 being further modified for carrier operations as the J-15 and two fresh designs for “stealth” aircraft being showcased as the J-20 and J-31<sup>11</sup>. Without doubt the PRC’s dedicated effort to develop cutting edge military aviation equipment is bearing fruit and is giving the PLAAF a much more modern fleet while it retires legacy aircraft in preference for newer more capable machines. Indigenous development of modern weapons such as guided bombs and missiles is also in evidence. Adequate writing exists on these two aspects in aviation literature.

Till such time as it is able to develop modern aircraft of a particular type PLAAF continues to field the earlier types with modifications where possible. There are a mere three air forces that today field dedicated bombers in their fleets. These are the USAF, Russian Air Force and PLAAF. Most other air forces have retired their bomber fleets in favour of fighter-bombers, missiles and updated military philosophies and strategies. The effort in building a modern air force by the PRC and PLAAF is showing visible results. The equipment in service has moved from being predominantly based upon designs dating back to the 1950s and 1960s to modern fourth generation fighters equipped with modern avionics and weapons. Indigenously developed support aircraft such as Airborne Warning and Control Systems (AWACS) are also a part of the modern PLAAF's Order of battle (ORBAT). The equipment upgradation of PLAAF clearly indicates that it is well on its way to taking its place amongst the powerful Air Forces in the world.

### **Analysis of Actual Capabilities of the PLAAF**

China has historically been very secretive about its military equipment and capabilities. However some information from the Pakistani media helps supplement the trickle of information in the public domain from China's English language media. The Pakistan media recently carried an article proclaiming that the Chinese Air Force can now carry out long range precision strikes through deployment of its H-6K

variant of the six to seven decades old H-6 subsonic bomber<sup>12</sup>. This new modification apparently enables the H-6K to launch guided weapons in addition to its earlier dumb bomb weapon load. This is not a unique capability by any means. Most modern air forces possess such capability and take it in their stride as routine with no fanfare. The availability of guided weapons on board long radius of action capable fighters from various sources readily delivers such capability. The upgraded teen series US fighters such as the F-16C/D, F-15E, Mirage 2000-5 of France, etc. have given their operators this capability for several years. The more modern Russian aircraft such as Su-30, in its many variants, alongside the Rafale and Eurofighter Typhoon also give their operators this capability.

A difference is that unlike subsonic bombers like the H-6, which is a copy of the Soviet era Tupolev Tu-16 and whose first copy was received by China in 1958<sup>13</sup>, the fighter-bomber aircraft mentioned above can also fight their way in and fight their way out of contested airspace on their own; the H-6 in all its variants would require a benign aerial environment or dedicated fighter escorts to be effective in actual war.

Most air forces that have a high level of training and capability do not trumpet routine events such as air-to-ground weapon firing training, "Pilot cadets in live fire training"<sup>14</sup>, operating in bad weather, dissimilar air combat

training (DACT) etc. as these are routine events in a normal training calendar. However, the fact that the Chinese media often specially reports on particular air regiments carrying out “operations in difficult weather conditions”<sup>15</sup>, “carrying out live firing training of air-to-ground weapons”<sup>16</sup>, air-to-ground weapon firing training in high altitude areas, “Chinese helicopters in cross-day-and-night firing training”<sup>17</sup>, “Full Text: The Diversified Employment of China's Armed Forces”<sup>18</sup>, etc.<sup>19</sup> appears to indicate that the actual training and execution capabilities of regular units of PLAAF may not be at par with the capabilities of their equipment. The military forces of other countries that possess modern air forces and the media in these other countries, such as the US, UK, France Italy, Pakistan, Germany, Russia, Netherlands, Norway, Sweden, Finland, Belgium, India, etc. see nothing extraordinary in such events and apparently consider them below the required threshold of uniqueness for them to be reported on. These aforementioned air forces go ahead and carry out similar and often more complex training quietly without any fanfare, taking it in their stride as routine and of no special note. The fact that the state controlled China media and apparently the PLAAF does see these as ‘achievements’ of noteworthy enough level to report upon may be giving outsiders an unintended insight into the actual operational capability of PLAAF. It is safe to assume that PLAAF’s equipment is approaching that fielded by the leaders in aviation technology. The PLAAF’s overall war-

fighting philosophy is also moving from the outdated ‘peoples war’ concept to more modern concepts such as ‘high tech border war in informationalised’ conditions. The PLAAF’s training state, at least at the current time, may make achievement of these new concepts a stretch for regular PLAAF units. PLAAF appears aware of this deficiency<sup>20</sup>. The PLAAF, in the recent past, has been conducting an increasing number of exercises to enhance its training levels with friendly air forces such as those of Russia, Turkey, Pakistan amongst others<sup>21</sup>. Over time this training is likely to show its effect in increasingly more capable crew in the PLAAF’s operational units<sup>22</sup>. It could be assumed that for the next decade or two the PLAAF is likely to lag in actual capability from that indicated by its equipment status. In short, despite appearances, the PLAAF is not ten feet tall yet by a wide margin. The countries in PRC’s periphery that are viewing the increased military capability of PRC coupled with its belligerence with alarm. In view of the PLAAF’s apparent training state, there appears to be a window of about a decade and a half for these countries along China’s periphery to build up their own capabilities. Development of asymmetric capabilities may be effective in countering the PRC’s military in future in case the need arises. Enhanced training to ensure that the quality of their personnel are able to negate the PRC’s equipment quality and quantity could be one arm of a solution that also seeks to improve equipment quality. Numbers are unlikely to be matchable by any of PRC’s

neighbours, except maybe Japan and India in the medium to long term given the size of the economy and other resource available with these two countries.

## Conclusion

PLAAF has developed rapidly in the past three decades towards a transformation from a large and antiquated force to one that fields modern aircraft and weapons. This transformation, as in evidence from fielding of reverse engineered or domestically developed modern aircraft, conveys a picture of an effective and formidable air force. However, despite the paucity of reliable information available in the public domain about PLAAF, the few random articles in the Chinese and Pakistani media about Chinese capabilities, articles apparently meant to show great ability, help in an informed analysis about PLAAF's actual capabilities by reading between the lines. The media articles regularly tout great achievements of things that are so routine to most other air forces as not deserving any mention at all. Thus, it can be assumed that while PLAAF has rapidly moved towards modern equipment, its change of mind-set, quality of manpower and actual combat capabilities could take up to a decade or two to match those of other air forces that started to induct modern equipment earlier. This gives nations, uncertain about PRC's intentions in view of PRC's increasing belligerence and apparently growing military might, a window to bring their own

capabilities up to par to be an effective deterrent to PRC's growing military capability.

*(Disclaimer: The views and opinions expressed in this article are those of the author and do not necessarily reflect the position of the Centre for Air Power Studies [CAPS])*

## Notes

<sup>1</sup> D. R. Mohanty, "The Dragon Flying High? Examining China's Aerospace Industry: The Maoist Era", *Strategic Analysis* [Volume 23](#), Issue 12, 2000.

<sup>2</sup> Ibid.

<sup>3</sup> Xue Guangqiu, *War Wings: The United States and Chinese Military Aviation, 1929-1949*, (London: Greenwood Press, 2001), pp30-36;

<sup>4</sup> D. R. Mohanty, "The Dragon Flying High? Examining China's Aerospace Industry: The Maoist Era", *Strategic Analysis* [Vol. 23](#), Issue 12, 2000.

<sup>5</sup> Xue Guangqiu, *War Wings: The United States and Chinese Military Aviation, 1929-1949*, (London: Greenwood Press, 2001), pp 131-135

<sup>5</sup> Xue Guangqiu, *War Wings: The United States and Chinese Military Aviation, 1929-1949*, (London: Greenwood Press, 2001), pp 148-149; Niosi, J. and J.Y. Zhao, "China's catching up in aerospace", *Int. J. Technology and Globalisation*, Vol. 7, Nos. 1/2, p81.

<sup>6</sup> sjsu.edu, "The Great Leap Forward Period in China, 1958-1960", <http://www.sjsu.edu/faculty/watkins/greatleap.htm>, accessed on October 19, 2015.

<sup>7</sup> stanford.edu, "Introduction to the Cultural Revolution", <http://iis-db.stanford.edu/docs/115/CRintro.pdf>, accessed on October 19, 2015.

<sup>8</sup> Ibid.

<sup>9</sup> airforce-technology.com, "JF-17 Thunder / FC-1 Xiaolong Multirole Combat Aircraft, Pakistan", <http://www.airforce-technology.com/projects/fc1xialongjf17thunder/>, accessed on October 15,, 2015.

<sup>10</sup> military-today.com, "Chengdu J-10", <http://www.military-today.com/aircraft/j10.htm>, accessed on October 15, 2015.

<sup>11</sup> Ryan Henseler, "China's Super Weapons: Beware the J-20 and J-31 Stealth Fighters",

<http://nationalinterest.org/blog/the-buzz/chinas-super-weapon-beware-the-j-20-j-31-stealth-fighters-13477>, accessed on October 15, 2015.

<sup>12</sup>dawn.com, "China's Air Force Can Launch Long-Range Precise Strikes", <http://www.dawn.com/news/1213033/chinas-air-force-can-launch-long-range-precise-strike>, accessed on October 14, 2015.

<sup>13</sup> Zachary Keck, "Can China's New Strategic Bomber Reach Hawaii?", <http://thediplomat.com/2013/08/can-chinas-new-strategic-bomber-reach-hawaii/>, accessed on October 19, 2015.

<sup>14</sup> Peoples daily online, "Pilot cadets in live fire training", <http://en.people.cn/98649/8591074.html>, accessed on October 19, 2015.

<sup>15</sup> Allen et al., 'China's Air Force Enters the 21st Century', pp. 33-103.

<sup>16</sup> Regular perusal of websites <http://www.globaltimes.cn>, <http://www.chinamil.com.cn>, <http://www.chinaorg.cn> and <http://www.xinhuanet.com/english/>, accessed daily since January 2007 and last accessed October 16, 2015.

2013.

<sup>17</sup> Peoples daily online, "Chinese helicopters in cross-day-and-night firing training", <http://en.people.cn/98649/8611041.html>, accessed on October 19, 2015.

<sup>18</sup> Xinhua, "Full Text: The Diversified Employment of China's Armed Forces", <http://www.globaltimes.cn/content/775207.shtml>, accessed on October 19, 2015.

<sup>19</sup> Allen et al., 'China's Air Force Enters the 21st Century', n. 33, pp. 120-

133.

<sup>20</sup> Allen et al., 'China's Air Force Enters the 21st Century', n. 33, pp. 120-

133.

<sup>21</sup> 'Joint Exercise "Shaheen-1" between Pakistan and Chinese Air Forces Launched, Islamabad', 18 March 2011, available at [http://www.paf.gov.pk/18\\_Air\\_Exercise.html](http://www.paf.gov.pk/18_Air_Exercise.html), accessed October 19, 2015.

<sup>22</sup> Cliff, Roger, et al., 'Shaking the Heavens and Splitting the Earth', 2011, available at <http://www.rand.org/pubs/monographs/MG915.html>, accessed October 20, 2015.