



ZHUHAI AIR SHOW 2014

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A nation hosts an international air show to show its prowess in the aeronautical field. The Zhuhai air show is being held by China once every two years since 1996 and, as expected, it has not lost the opportunity to announce to the world that it is making rapid progress in R&D and manufacturing of aircraft and air armament. So, while the 2012 edition showcased UAVs and helicopters, the 2014 air show (held from 11-14 November 14) has announced to the world the harnessing of stealth technology through the *official* unveiling of the J-31 stealth fighter..

The lead-up to Zhuhai in the second half of October 2014 saw the thrust of the Chinese media on two major issues. They were

(a) Rapid developments claimed to be taking place in their aeronautical industry on the aviation and missile manufacturing, and

(b) The showcasing of these developments that would take place in the Zhuhai air show.

These news reports indicated that the Chinese are cognizant of the fact that they have a lot of catching up to do with the Americans in the air armament field. Thus, the thrust has been to project a view that they are fast narrowing the gap and despite the Western press reporting for some years now about the ongoing test flights of their Y-20 transport aircraftⁱ and J-31 stealth fighter, the Chinese press has been belabouring these 'achievements.' Progress in air to air missile development using active seeker technology is a notable achievement that was show cased. This brings China among very few countries that have been able to harness this technology. This article

discusses the major aeronautical developments that were highlighted in the lead-up to Zhuhai 2014 and during the air show itself, with special emphasis on the J-31 stealth fighter..

AERONAUTICAL DEVELOPMENTS

Aircraft Updates

The key aircraft development projects underway include the J-31 stealth fighter, the KJ-500 Airborne Early Warning and Control System aircraft and the Y-20 large military transporter, all continuing their test flight phase. All these have been widely commented upon in the Western aviation press too and point towards they being flagship programmes in the fighter and transport aircraft category. Prior to the airshow, these aircraft were seen together at the flight testing facility at Yanliang airfield.

J-31 Stealth Fighter

The J-31 stealth fighter was the star at the Zhuhai air show. The aim of the Chinese was to hard sell the J-31 to their friends and allies at the air show and hence was positioned as a cheap alternative to Western aircraft which are either very costly or barred from being exported by their Governments. The demonstration practices by the J-31 at Zhuhai showed benign manoeuvres being carried out, but that was to be expected from a prototype.ⁱⁱ The actual demonstrations during the air show were also very basic and rudimentary. The stark similarity of the J-31's aerodynamic surfaces and overall design with that of the American F-35 shows that the Chinese have spared no effort at technical espionage. Could they do a reverse and offer the design to the Russians in lieu of engine technology would be an interesting thought, but given the threat this would pose to Russian engine exports, it is doubtful that this would happen. The credibility of stealthy characteristics of the J-31 was however called into question due the 'dirty' engine exhausts that made the aircraft visible from quite some distance.ⁱⁱⁱ It needs to be remembered that the J-31 is using the Russian RD-93 power plant since its own indigenous product is still some years away. The fact that the J-31 did an aerial demonstration but was not put on static display,^{iv} where it would have been closely analysed by experts, was a curious decision that only added to

the ambiguity on the 'stealthy' attributes of the aircraft and indicated lack of confidence at serious close scrutiny by professionals!

The initial reaction of some western observers to the development of the J-31 has been that it could prove to be a potent weapon platform that could favourably match fourth generation Western aircraft at a much lower price tag.^v Since no Western pilot had even seen the J-31 flying before the Zhuhai air show, leave aside operating it, this assessment should be taken with some caution, as many times an opponent's equipment is hyped up to get more funds allotted from one's own government! The Pentagon's assessment is that the J-31 would not be operational before 2018 and that Pakistan and Brazil may be prospective customers;^{vi} the fact that the J-20, which is a much more capable and larger aircraft, has been kept under wraps indicates that it may be for exclusive Chinese use.^{vii}

Female Aerobatic Pilots

The J-10 equipped August-1 aerobatic team (named after the date on which the PLA was created), besides giving aerial displays, also showcased the fact that there were female fighter pilots as part of the team.^{viii} While this 'announcement' was a declaration of the presence of female fighter pilots, it was also an assertion of a fact with politically overtones. It was stated by the state media that each of those five women had more than 750 hours of flying time on four types of aircraft. When considered with respect to the yardsticks of other famed aerobatic groups (both the Indian Surya Kiran aerobatic team and the RAF Red Arrows have fully operational pilots with accreditation of being flying instructors),^{ix} the meager flying experience points to the fact that they were perhaps just occupying the second seat and were part of a PR exercise of the Chinese!

Progress on JF-17

Considering the close cooperation between the Chinese aviation industry and the Pakistan Aviation Complex at Kamra, it was expected that there would be sizeable presence of the Pakistanis. In the event, there was a single JF-17 that was brought and that too for a static display only, as against three that had been brought in the last two shows along with transport aircraft and their aerobatic team. Does this show a slowing down in their aviation tie-up was the obvious

question posed; this was denied by Air Cmde Khalid Mahmood, Pakistan's Chief Executive of JF-17 sales and marketing, who said that the PAF had sent a full Sqn of 18 JF-17 to the Shaheen II exercise in China. He also brought out that the PAF is in the process of upgrading its JF-17 to Block II configuration with better avionics and a fixed Air to Air refuelling probe.^x

Planned exports of the JF-17 to eight countries in the Middle East have not been able to fructify due the turmoil in the region.^{xi} The Vice President of China National Aero-Technology Import & Export Corporation (CATIC) was quoted as saying that some nations are close to signing the contract, but this has been a statement repeated in earlier air shows too with no subsequent forward movement.

PL 12 Air to Air Missile

The PL-12 Beyond Visual Range (BVR) air to air missiles (AAM) was also displayed at Zhuhai.^{xii} The Chinese have achieved remarkable progress under their Project 129 programme in developing the PL 12 AAM which reaches standards of the American AIM 120 AAM.^{xiii} Developed sequentially from initial reverse engineering of the US Sparrow missile family, the Chinese bought a large number of Italian Aspide AAMs and reverse engineered them to produce the PL 11 AAM.^{xiv} The PL-11, a semi-active AAM, has been sold in large numbers to developing countries but the harnessing of active seeker head technology in the PL-12 AAM is worth something to crow about. The Chinese are thus in the league of advanced missile manufacturers. Pakistan has already been supplied this BVR missile, thus bridging the gap that existed between the IAF and PAF in BVR engagement capability till a decade or so ago. The next step in increasing the BVR engagement ranges is already underway by the Chinese, who are developing the PL-13 and which is supposed to have flown on some test flights of the J-20.^{xv}

Aircraft Jet Engine Programme

One area which the Chinese aviation industry has not been able to harness is advanced jet engine technology, despite many attempts at reverse engineering Russian supplied engines. Thus, flight testing of their flagship J-31 continues with the Russia RD-93 engine. Press reports indicate that

negotiations are ongoing with Russia for supply of twenty Su-35 fighters and some spare engines. While transfer of engine technology is not reported to be part of the deal, what is being conjectured is that purchase of such a small number of fighters does not make operational sense and the real motive is to lay hands on latest engine technology through the Su-35's Saturn 117S turbofan engine.

CONCLUSION

China has used the Zhuhai air show 2014 to showcase its advancements in the aviation sector. The main aim appeared to be to hard sell the J-31 stealth fighter. However, the fact that the spectators were given just an aerial demonstration of basic manoeuvres and the aircraft not put on static display where it would have been subjected to close scrutiny, points to some under confidence amongst the Chinese designers on their product. The decision not to display the larger J-20 is also intriguing and would be a subject of much debate in the days to come. Another area of interest would be the progress made in developing a modern afterburning fighter engine. When that happens, Chinese aviation would have arrived.

The harnessing of active seeker head technology by the Chinese aviation industry poses a special significance for India. Pakistan would now have access to cheap futuristic missile technology, as against their present costly (and perhaps restricted) imports from the West, especially from the US. Given the slow progress made by the Indian Defence Research and Defence Organisation (DRDO) in this field makes it imperative that Indian analysts watch this area very closely. The BVR advantage that the Indian Air Force possessed against both the Air Forces has gradually eroded.

(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))

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ⁱFor eg see a Global Security article <http://www.globalsecurity.org/military/world/china/y-xx.htm>

ⁱⁱ <http://theaviationist.com/2014/11/06/j-31-zhuhai-airshow-practice/>

ⁱⁱⁱ Ibid.

^{iv} <http://www.abc.net.au/news/2014-11-12/china-unveils-sophisticated-stealth-fighter-aircraft/5884038>

^v<http://news.usni.org/2014/11/05/u-s-pilots-say-new-chinese-stealth-fighter-become-equal-f-22-f-35>

- ^{vi} http://blog.foreignpolicy.com/posts/2014/11/11/chinese_stealth_fighter_takes_off_under_obama_s_nose?utm_source=Sailthru)
- ^{vii} Ibid. Also see http://www.nytimes.com/2014/11/11/business/international/with-a-stealth-fighter-china-tries-to-gain-attention.html?_r=0
- ^{viii} <http://www.abc.net.au/news/2014-11-12/china-unveils-sophisticated-stealth-fighter-aircraft/5884038>
- ^{ix} <http://www.raf.mod.uk/reds/pilots/>
- ^x <http://www.flightglobal.com/news/articles/airshow-china-pakistan-outlines-jf-17-upgrade-activity-405957/>
- ^{xi} <http://www.flightglobal.com/news/articles/airshow-china-catic-hunts-elusive-jf-17-export-deal-405956/>
- ^{xii} <http://www.defense-aerospace.com/cgi-bin/client/modele.pl?shop=dae&modele=release&prod=158804&cat=3>
- ^{xiii} <http://www.globalsecurity.org/military/world/china/pl-12.htm>
- ^{xiv} <http://www.ausairpower.net/APA-PLA-AAM.html#mozTocId280634>
- ^{xv} <http://www.wantchinatimes.com/news-subclass-cnt.aspx?id=20130930000029&cid=1101>

