China, Pakistan Aerospace Connect

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Abstract

The JF-17 Thunder fighter aircraft, jointly developed by Pakistan and China, can be considered a showcase of Sino-Pak defence cooperation. Pakistan continues to be China's strongest ally. After dismemberment of Pakistan and creation of Bangladesh in 1971, Pakistan forged a formal strategic alliance with China in 1972. The China Pakistan Economic Corridor (CPEC) remains the 'crown-jewel' of China's Belt and Road Initiative (BRI). Pakistan continues to be a key element of China's 'string of pearls' policy to create sphere of influence around India. For Pakistan, China is a low-cost-highvalue deterrent against India. China helped Pakistan build its military-industrial complex, and Pakistan is the biggest purchaser of Chinese weapons. Aerospace has been the lynch-pin of Sino-Pak defence relationship. China helped Pakistan set up the Pakistan Aeronautical Complex (PAC). Pakistan today produces 25 JF-17 a year, and, with help of China, is looking for export markets in competition with India's Light Combat Aircraft (LCA). Pakistan Air Force (PAF) and Peoples Liberation Army Air Force (PLAAF) regularly conduct Shaheen series of joint air exercises. Close ties between PLAAF and PAF force Indian Air Force (IAF) to cater for a two front war. Pakistan is strong enough to be a spoiler and, in cahoots with China, could pose a substantial threat.

he JF-17 Thunder fighter aircraft jointly developed by Pakistan

and China, can be considered a show-case of Sino-Pak defence cooperation. Pakistan continues to be China's strongest ally. Their close relations date back to just after Sino-Indian war of 1962, when in 1963 Pakistan ceded to China 5,180 sq km of land in Karakoram region of north Kashmir¹ to appease China, and signed the Sino Pakistan Agreement. In return, China began providing economic and military assistance. After dismemberment of Pakistan and creation of Bangladesh in 1971, Pakistan forged a formal strategic alliance with China in 1972. In 1978, Chinese operationalised the Karakorum highway linking northern Pakistan with western China². China later became Pakistan's largest arms supplier. Today China supports Pakistan on Kashmir, Pakistan supports China on Tibet, Taiwan and Xinjiang. China's national strategic interest of getting a seaport and a highway close to the oil rich middle-east made it commit US\$ 46 billion in the Gwadar deep-water port and the road and rail corridor leading to it, called the CPEC. Long term plan is to lay an oil/gas pipeline from Gwadar to central China. CPEC remains the 'crownjewel' of China's Belt and Road Initiative (BRI). Pakistan continues to be a key element of China's 'string of pearls' policy to create sphere of influence around India. For Pakistan, China is a low-cost-highvalue deterrent against India. China helped Pakistan build its militaryindustrial complex, and Pakistan is the biggest purchaser of Chinese weapons. In the 10 years period (2008-18), China has supplied weapons worth over \$6.4 billion to Pakistan, with the US coming a distant second at \$2.5 billion³. Aerospace cooperation has been the lynch-pin of Sino-Pak relationship.

Evolution of Military Production Relations

In the early 1980s China was looking for partners and markets to buy its still low end products and platforms. Pakistan needed an ally to balance strong dominance of USA in their relationship. China initially helped Pakistan to upgrade the ordnance factory at Wah near Rawalpindi. China also allowed license production of MBT-2000 (Al-Khalid) tank which was essentially a Chinese variant of Russian T-90⁴. It also built a turnkey ballistic missile manufacturing facility near Rawalpindi. China is building the most advanced naval warships for Pakistan. China has also committed to supply Pakistan with eight new stealth attack submarines by 2028, four of which will be constructed in China and the remaining four in Pakistan⁵. Significantly, all these involve transfer of technology to Pakistan. China reportedly supplied Pakistan with nuclear technology including, perhaps, the blueprint for Pakistan's nuclear bomb. After India signed the 123 civil nuclear-agreement with USA, China agreed to set up two nuclear power stations in Pakistan.

Sino-Pak Aerospace Cooperation

The PAF is the 7th largest Air Force in the world and the largest in the Islamic world with around 410 combat⁶ aircraft. China started supplying PAF F-6 aircraft (air defence version of MiG-19) in 1965. A squadron of Harbin H-5, a Chinese version of Russian Illyshin IL-28, was formed in early 70s. China helped establish Pakistan Aeronautical Complex at Kamra in 1973. The complex is wholly owned by PAF with all appointments controlled by PAF Chief. In mid 1980s PAF received A-5Cs (Chinese MiG-19 ground attack variants) and Chengdu F-7s (Chinese MiG-21).

Pressler Amendment, 1990, banned most economic and military Pakistan after nuclear tests. USA assistance to froze F-16 deliveries and stoppage of spares for many years. Thereafter, Pakistan went whole hog to China for all its aerospace needs. In 2007, as a part of a joint-venture project. China rolled-out a 'designed' for Pakistan' fighter JF-17 'Thunder'7. Currently, PAF has 150 of these, and numbers will increase to 300 later. For long PAF was negotiating with China for 36 Chengdu J-10 'Vigorous Dragon' fighters (PAF designation FC-20), the tail-less delta wing with canards which Chinese claim comparable to JAS 39 and Dassault Rafale. The negotiations were called off in 2016. Six ZDK-03 Chinese AWACS have been inducted. 60 Chinese designed K-8 Karakorum intermediate jet trainers are currently in service and more are on order. PAF has also received four CH-4 recce-cum-strike drones which can carry up to 4 Precision Guided Munitions (PGMs) and reportedly have endurance of 30 hours. PAF has bought Chinese SD-10 (ShanDian-10) radar-guided, mid-range homing air-to-air missiles to equip the JF-17 fighters⁸. China has transferred 34 M-11, road-mobile, short range ballistic missiles (SRBM) with related technology, and manufacturing capability to Pakistan. Despite Chinese pledges to the contrary, it has continued to provide Pakistan with specialty steels, guidance systems and technical expertise in the latter's effort to develop long-range ballistic missiles. Hatf, Shaheen and Anza series of missiles have been built using Chinese assistance. China helped Pakistan develop nuclear warheads that directly contributed to Pakistan having nearly 150 nuclear warheads as on date.

Sino-Pak Success - JF-17 'Thunder'

The JF-17 Thunder or CAC FC-1 Xiaolong is a light-weight singleengine, multirole combat aircraft designed by China and produced jointly by Pakistan Aeronautical Complex (PAC) and the Chengdu Aircraft Corporation (CAC) of China. The aircraft can be used for aerial reconnaissance, ground attack, and air interception. This flyby-wire, 1.8 Mach fighter is powered by Russian Klimov RD-93 turbofan engine. China had contracted to buy 100 RD-93 engines from Russia for the FC-1 (JF-17), with an option to buy another 400°. It could later be powered by the Chinese indigenous Guizhou WS-13 engine. Aircraft has wide-angle Head Up Display, aerial refuelling, a data-link, and KLJ-7 doppler radar. The aircraft has an electronic warfare suite. It can carry 6,700 lb (3100 Kg) external load on seven hard-points. Weapons are mostly Chinese, and include the Gsh 23 PL-5 short-range air-to-air missile. LS-6 mm aun. 'Thunderstone' GPS-guided glide bombs, and YJ-12 supersonic and YJ-83 subsonic anti-shipping missiles. PAF maintains one squadron in the maritime strike role. PAF had ordered 600 Chinese PL-12 radar-guided Beyond-Visual Range (BVR) missile with a range of around 80 km. Chinese claim that missile is comparable to the American AIM-120 AMRAAM and the Russian R-77.

Aircraft costs have been kept low by borrowing technologies developed for Chinese J-10 fighter. The JF-17 was inducted in February 2010 and will soon become the backbone of the PAF. In 2015 PAC produced 16 JF-17s. Currently, Pakistan is believed to have capacity to produce 25 JF-17 per year¹⁰. Work share wise, 58 per cent of the airframe is Pakistani and 42 per cent Chinese. As of 2019, Pakistan operates around 100 JF-17s in five operational squadrons, plus a testing and training unit. Nearly 70 jets are of Block 1 Type, and remaining are Block Type II. The aerial refuelling got introduced in Block II. In May 2019, China has delivered the first overhauled multi-role JF-17 fighter jet back to PAF¹¹. The last three JF-17 Block II aircraft were delivered to the PAF in June 2019.

A Block III variant of the JF-17 is under development. Production of the Block III aircraft has reportedly started. It will have the Chinese KLJ-7A active electronically scanned array (AESA) radar, digital fly-by-wire flight control system, a new helmet mounted display, network-centric warfare capability, an infra red search and track system, new electronic warfare systems, weapons upgrade and a radar cross-section reducing 'pseudo-stealthy' airframe. The weapons will include new longer range and more sophisticated air to air missile, the PL-15 (150 km). The Block III is being called a 4th generation-plus fighter by some. The AESA and PL-15 combination with a 150km range would outrange all IAF aircraft till Rafale and SU-30 MKI upgrade enters service. The PAF plans to operationally deploy the latest variant in 2020. PAF plans to procure 50 Block III by 2024 and 26 two-seat JF-17Bs¹². Older JF-17s may also be upgraded to the Block III variant later. The earlier JF-17 variants were priced around \$15-28 million. The new Block III, will reportedly cost around \$32 million each. Since its induction in 2011, the JF-17 Thunder has accumulated over 25,000 hours of operational flying. The two-seat JF-17B is used for training, and is more effective electronic warfare platform with second seat having a weapons systems officer (WSO).

Three JF-17's have been sold to Nigerian Air Force in 2018, and have delivered at least six out of an order of eighteen JF-17Ms to Myanmar. China and Pakistan are aggressively trying to find possible export customers. Targeted countries are Algeria, Argentina, Bangladesh, Egypt, Iran, Myanmar, Malaysia, Morocco, Nigeria, Sudan, Sri Lanka and Zimbabwe. The reasonable price makes it attractive.

Tejas LCA and JF-17 Compete

Comparisons are being drawn between the JF-17 and India's Light Combat Aircraft 'Tejas' LCA Mk1. The Tejas uses many new technologies including large amounts of composite materials, advanced avionics and a unique aerodynamic configuration, and has a good potential to be expanded into variants. JF-17 is considered the aircraft of today and the Tejas the aircraft of tomorrow. The JF-17 Block II costs close to US\$ 25 million¹³, vis-a-vis the LCA Mk 1 around US\$ 28 million.

LCA Tejas has been manufactured by a single country, and is claimed to be the world's lightest supersonic fighter. Currently only one squadron with 16 aircraft has been formed. Aircraft production is still to be ramped up to 16 aircraft a year. The more comparable LCA Mk 1A will have its first flight only in 2021. The JF-17 is joint project between China and Pakistan. More than 100 are already flying. The aircraft production is now stable at nearly 24 aircraft a year. The Block III variant with a modern AESA radar is likely to induct in 2020. There are already two foreign customers flying the JF-17. JF-17 has been in service for last 10 years and serves in six squadrons at full operational capability, whereas the Tejas has only one squadron for four years. LCA and JF-17 are competing for the Malaysian contract. The two contenders have "fairly similar" performance. JF-17's Russian engine has maintenance and serviceability issues well known to Malaysia from their MiG-29 experience. LCA's General Electric F404 engine is much more reliable.

Beyond JF-17

Pakistan had chosen the Chinese Chengdu J-10B fighter over the Lockheed Martin F-16C Block 52/60, the most advanced F-16, currently in PAF inventory. J-10 B had a new radar and OLS targeting system, and its new generation stealthy features, such as its DSI intake. But deal never went through. Beyond the JF-17, China and Pakistan are involved in several projects to enhance military and weaponry systems. K-8 Karakorum advance training aircraft, tailor made for PAF based on the Chinese domestic Honodu L-15. China technology. supports Pakistan in space and AWACS systems, Pakistan Army has imported Chinese-built Low to Medium Altitude Air Defence System (LOMADS) LY-80.

Sino-Pak Arms Exports

China has an eventual goal of selling \$1 billion worth of defence equipment every year. Pakistan is pushing for greater weapons selfsufficiency. In 2016, Pakistan signed a deal with Myanmar for the sale of 16 JF-17 fighters, worth estimated \$400 million, including spare parts. Earlier in 2017, Turkey contracted to buy 52 Super Mushshak training aircraft¹⁴. Ankara later agreed to buy 1,000 PK-83 general purpose bombs. China has helped Pakistan improve its ability to produce advanced weapons, well beyond just small arms. Pakistan plans initially to concentrate on markets of countries with budget constraints, such as in Africa. However, due to financial mess, Pakistan is under International Monetary Fund pressure to limit its military spending. This also limits its capacity to provide loans to low-budget countries. Pakistan has ordered eight Chinese submarines, mainly because the quality of Chinese submarines had improved over time and the price was almost half that of European submarines.

Sino-Pak Air Exercises

PAF and PLAAF have participated in a series of exercises called Shaheen since 2011 to improve inter-operability to respond to 'mutual threats'. The missions have included simulated air combat, surface attack missions, air-refuelling and logistic support missions. Shaheen-I was held in Pakistan. Shaheen-II was held in September 2013 in Hotan in Western China. PAF had then sent Mirage III EA and F-7G (MiG-21 class) aircraft. PLAAF fielded J-10 multi-role fighters and J-7C. The more manoeuvrable J-10s acted as the aggressors. The three week-long Shaheen-III exercise was held in May 2014 at PAF Rafigi airbase. The exercises gave both the Air Forces opportunity to improve specific skills and to practice Dissimilar Air Combat Training (DACT). It also allowed to train under different threat environment and training philosophies. PLAAF was reportedly impressed by PAF's aggressive combat style and by the streamlined efficient training approach. These exercises were of special importance to PAF as it gave them exposure to fly against Chinese Sukhoi Su-27/Su-30MKK aircraft which are similar to the IAF frontline SU-30 MKI aircraft and to help them validate their tactics.

The most recent Shaheen VIII (Eagle VIII) was also held at Hotan in south-western Xinjiang in August 2019¹⁵, primarily to develop a mechanism for interoperability of both air forces. This was the first war-game after the Abrogation of Article 370. PAF participated with JF-17s while China fielded J-10 and J-11 fighters which are PLAAF's backbone. The J-10 is more or less a version" of the abandoned IAI Lavi fighter programme. The J-11 is a copied variant of the Russian Su-27 air superiority fighter.

Implications for India

Close ties between PLAAF and PAF force IAF to cater for a two front war. PLAAF with nearly 1700 combat aircraft (700 4th Gen plus) and aggressively modernizing, and nearly 450 aircraft of the People's Liberation Army Navy, and the soon to be inducted state-of-the art aircraft carriers, makes a great air power. PAF has 20 fighter squadrons. Current IAF: PAF ratio of 1.5:1 is a far cry from the once 3:1 dominance. The Force ratio edge of IAF over PAF is thus at an all-time low. With eight Chinese airbases in the Tibet Autonomous Region and many more in erstwhile Chengdu Military Region east of Myanmar, any collusion with PAF would encircle India and create significant air threat to counter. India thus needs to re-look at the force structure.Bottom of Form

IAF is currently down to 30 squadrons. Many Indian defence analysts believe that to cater for two-fronts, there is a need to eventually increase combat squadrons from hitherto targeted 42, to around 50 squadrons. IAF immediately requires advanced fighters, sophisticated support platforms and smart long-range weapons. The Defence R&D and Indian aircraft industry too would have to get their act right. IAF's long delayed acquisitions of 110 medium multi-role fighters; the development and production of the LCA and AMCA; the acquisition of more AEW&C and FRA force multipliers; acquiring long range air-to-air missiles; and build an arsenal of UCAVs need to unfold quickly. All this would require significant funding over the next three decades and defence budget must increase to at least 2.5 per cent of GDP from current 1.41 per cent. IAF needs to deploy more surface-to-air missiles on China border. There is a need for IAF to build up force levels quickly lest IAF gets left too far behind PLAAF and PAF bridges the gap.

The changed South Asian dynamic (with China rapidly expanding its footprint) necessitates various options for India to be considered on an urgent basis. For a lasting solution it is essential to break up the Pakistan-China nexus. India's muscle flexing, and the military response for terrorist provocations – air and land strikes – have driven Islamabad deeper into China's camp. Pakistan is strong enough to be a spoiler and, in cahoots with China, pose a substantial problem. Simultaneously, India needs prioritizing strategic and expeditionary military capabilities against China and for distant operations jointly with friendly states in the Indian Ocean Region and in Southeast Asia will secure India's extended security perimeter.

End Notes

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