



CHINA-PAKISTAN NEXUS JF-17 FIGHTER AIRCRAFT TROOPS IN, BUT WHERE IS THE THUNDER

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The Pakistan Air Force (PAF) is rapidly moving on the path to replace its old fighter aircraft – A-5, F-7, and Mirage-3/5 - with new JF-17 Thunder fighter aircraft jointly developed by Chengdu Aircraft Industry Corporation (CAC) of China and Pakistan Aeronautical Complex (PAC), Kamra. In April 2016 No. 2 Multirole Squadron based at Masroor (Karachi) became the fourth squadron of PAF to be equipped with JF-17. This article discusses the combat effectiveness - “Thunder” - of the JF-17 in service with the PAF.

JF-17 (Joint Fighter-17) is the Pakistani designation for this aircraft which is called FC-1 Xiaolong (Fighter China-1 Fierce Dragon) by the Chinese. JF-17 traces its history to China’s Super-7 fighter aircraft programme which was a joint venture between China and Grumman Aerospace Corporation of USA. In 1989 China and Grumman started a design study to produce a new improved J-7 fighter aircraft. But this plan ran into rough weather after the Tiananmen Square

incident when Western countries led by USA stopped arms trade with China. After Grumman left, the Chinese continued with the development work with help from the Russian MiG design bureau. In 1999, China and Pakistan signed an agreement for joint development and production of the aircraft but the avionics part for Pakistan could not be finalised due to sanctions by the West. Finally, it was decided that the avionics part is to be kept separate and airframe development can continue.¹

The first flight of the JF-17 took place in 2003 and in March 2007 Pakistan received two JF-17 pre-production models from China. Chengdu Aircraft Corporation was to build eight pre-production models, and after handing over the first two, China handed over the remaining six in March 2008. PAC, Kamra set up its new production line in January 2008 and by November 2009 PAC handed over the first production JF-17 to PAF. The JF-17 was formally



inducted into the PAF in February 2010 with No. 26 Squadron ("Black Spiders"), replacing its A-5 "Fantan" and forming the first JF-17 squadron at Kamra. The A-5 'Fantan' Chinese aircraft had been flying with the squadron from 1984 to 2010. The second JF-17 squadron was formed in April 2011 with No. 16 Squadron ("Black Panthers"), and the third PAF JF-17 squadron - No. 27 Squadron ("Zarrars") - was formed in May 2012 at Rafiqi airbase. No. 27 Squadron was earlier operating the Mirage-5F ROSE-III. As mentioned earlier the fourth JF-17 squadron - No. 2 Squadron - was formed at Masroor, in April 2016. No. 2 Squadron was earlier equipped with the Chinese F-7P aircraft. PAF was initially not satisfied with the Chinese avionics and wanted French radar and Mica air to air missiles to be integrated in the JF-17, but later, in 2011, they seem to have accepted the Chinese radar and avionics. The initial batch of 42 aircraft are all the Block-1 models which have the Chinese KLJ-7 pulse Doppler radar developed by the Nanjing Research Institute of Electronics Technology (NRIET). In the next batch PAF will replace the KLJ-7 radar with the Italian Galileo Avionica S-7 Grifo pulse Doppler radar. This radar will have much better look-down-shoot-down capability².

The JF-17 Block-1 model is a low cost light weight fighter aircraft built at a cost of about \$15 million to \$ 20 million³. The aircraft is powered by a single Russian Klimov RD-93 turbofan engine with 8.7 ton thrust. The aircraft thrust to weight ratio is 0.95. To improve the thrust to

weight ratio Pakistan is considering other engine options like the Chinese 9 ton thrust WS-13 which is still under development or the new Klimov 9.4 ton thrust RD-33MK engine⁴. The aircraft has a maximum speed of 1.6 Mach and a radius of action in ground attack role of about 700 km⁵. The aircraft internal fuel capacity is 3000 litres and it can carry one 800 litre drop tank on centre line pylon and two 800/1100 litre drop tanks on under wing pylons⁶. From this fuel configuration it is clear that this aircraft has a limited combat radius. Therefore, it is likely to be used for air defence of home bases or for close air support or for strikes on forward airfields closer to the international boundary.

The aircraft carries one internal 23 mm GSh twin barrel gun and has seven stations for external stores - one under the fuselage centreline, four under-wing stations and one on each wing tip. The air to air weapons options include up to four Chinese short range infra red homing missiles (PL-8/PL-9 class) or four PL-12/SD-10B active homing BVR missiles (70 km range⁷). The Chinese claim PL-12 to be of the same class as the American AIM-120A/B AMRAAM missile. PL-12 uses the same radar seeker from Russia's Vympel R-77 "Adder" BVR missile. The air to ground armament includes options for two C-802A anti ship cruise missiles on the wing inboard station; two anti radiation missiles on the wing outboard station; five 500 kg bombs; twin launchers for up to eight 250 kg

anti runway bombs; single 1000 kg bomb or GBU-10⁸.

Pakistan it seems is in a hurry to step up the production rate of JF-17 to replace its ageing fleet of Mirage-3/Mirage-5 and F-7 aircraft. In December 2015, at a ceremony in Kamra to rollout the 16th JF-17 built in 2015, PAF Chief of Air Staff, Air Chief Marshal Sohail Aman stated, "By the year 2020, PAF will say goodbye to some of its old fighter jets, including the Mirage⁹." It has also been reported that Pakistan plans to increase the production rate to 24 aircraft per year¹⁰. While Pakistan has the capacity to increase the production rate it seems that this is not enough to meet the demands of PAF. Perhaps, it is due to these reasons that Pakistan has decided to buy 110 new JF-17s from China. The first batch of 50 aircraft will be supplied in the next three years and the balance 60 will be supplied later, for which no delivery schedule has been announced.¹¹ With 65 JF-17s already in its inventory and PAC, Kamra manufacturing 24 aircraft per year, and China supplying 50 aircraft in next three years, i.e. by 2018/2019, it can be expected that by 2020 PAF will have a fleet of about 250-300 JF-17s. Therefore, PAF force structure in the next decade will have JF-17 as its main work horse.

The Chinese, it seems have developed the JF-17 mainly for the export market for third world countries who want to replace their old fleets with a low cost product. According to Dave

Majumdar while Pakistan may have been a development partner with China, it is perhaps the first and only buyer till now¹². Even the Chinese air force has not inducted this aircraft, possibly because they find the J-10 to be more useful for their requirements. The JF-17 Block-1 model is a basic low cost fighter aircraft with no air to air refuelling and no precision targeting capability. PAF has been employing JF-17s against the Taliban in their ongoing counter insurgency operations with the army in North Waziristan, but they have not been very satisfied with its ground attack capabilities. Air Marshal Muhammad Ashfaq Arain, PAF deputy chief, in an interview to Reuters, in April 2016, accepted that the lack of precision targeting in JF-17 was a handicap in operations against the Taliban¹³. Most of the burden for air attacks against the Taliban is being carried out by the four F-16 squadrons. F-16 has the capability to do precision, day and night targeting with its Sniper advanced targeting pod and DBO-110 advanced reconnaissance pod.

The improved JF-17 Block-2, which are now in production, have been provided with in flight refuelling and improved avionics, but even they do not have precision targeting pods. Apparently the Chinese have not been able to develop a suitable targeting pod for the JF-17. PAF is now looking for the Damocles third generation targeting pod manufactured by French company Thales. Damocles pod is similar to the Sniper Advanced Targeting Pod installed in PAF F-16s.

Damocles is equipped with electro optical and infra red sensors for day and night targeting.

Development work on the JF-17 is being done incrementally by adding new weapons and avionics. China is planning a third (Block-3) upgrade with Chinese built active electronically scanned array (AESA) radar, helmet mounted sight, infrared search and track (IRST) and new weapons. A two seat combat capable trainer version – J-17B – is also being developed and is likely to be delivered by end of 2016¹⁴.

In its present form with no precision targeting, limited radius of action and other limitations the JF-17 does not fully meet PAF's requirement for an effective weapon delivery platform. PAF will have to wait for the Block-3 variant for the JF-17 to be more combat effective. But despite its many shortfalls the JF-17 remains a "prized" possession of Pakistan. The usefulness of JF-17, for PAF, is that it is cheap; it will be available in large numbers and is being produced indigenously in collaboration with its trusted partner, China. PAC is producing 58% of the airframe at Kamra and the balance 42% is being made in China by Chengdu Aircraft Corporation (CAC). Three types of platforms in PAF – the A-5, F-7 and the Mirage-3/5 – will be replaced with a single JF-17 platform. This will provide significant benefits in terms of maintenance, logistics inventory management and training. Another important aspect of the JF-17 programme is that while it is no match to the

American F-16 aircraft, it frees Pakistan from the unbearable threat of sanctions and choking of supplies in a crisis as has been done in the past by the Americans in 1965, and again with the Pressler Amendment in the 1990s.

For cash strapped Pakistan, the JF-17 is a low cost alternative to replace almost 75% of its obsolete fleet. But unless Pakistan can procure advanced avionics and weapon systems for the Block-3 variant, the JF-17 will remain just a new third generation combat aircraft without the "Thunder". It will provide PAF the numbers but will be of limited combat effectiveness against the IAF.

The JF-17 programme is another example of the "higher than the Himalayas" friendship between China and Pakistan. India needs to be aware that the China-Pakistan nexus is continuing unabated not only in the nuclear, diplomatic and economic fields but also in the development of Pakistan's military aviation industry.

(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

¹ "IHS Jane's All the World's Aircraft: Development & Production," p. 114.

² Airforce-technology.com, "JF-17 Thunder / FC-1 Xiaolong Multirole Combat Aircraft, Pakistan," <http://www.airforce-technology.com/projects/fc1xiaolongjf17thund/>, accessed on June 23, 2016.

³ Airforce-technology.com, "JF-17 Thunder / FC-1 Xiaolong Multirole Combat Aircraft, Pakistan," <http://www.airforce-technology.com/projects/fc1xiaolongjf17thund/>, accessed on June 23, 2016.

⁴ Richard D Fisher Jr, "DSA 2016: Pakistan bullish on JF-17 sales", *IHS Jane's*, April 21, 2016, <http://www.janes.com/article/59661/dsa-2016-pakistan-bullish-on-jf-17-sales>, accessed on June 23, 2016.

⁵ "IHS Jane's All the World's Aircraft: Development & Production," p. 115.

⁶ Pakistan Aeronautical Complex Kamra website, "JF-17 Aircraft", accessed on June 23, 2016.

⁷ Air Marshal (Retd) VK Bhatia, "Air-to-Air Missiles - What's New Around," *SP's Aviation*, Issue 2-2012, http://www.sps-aviation.com/story_issue.asp?Article=909, accessed on June 23, 2016.

⁸ "IHS Jane's All the World's Aircraft: Development & Production," p. 114.

⁹ "Pakistan meets JF-17 production target," *The Express Tribune Pakistan*, December 29, 2015, <http://tribune.com.pk/story/1017904/another-milestone-pakistan-meets-jf-17-production-target/>, accessed on June 23, 2016.

¹⁰ PTI, "New batch of JF-17 Thunder jets inducted into Pakistan air force," in *The Economic Times*, April 11, 2016.

¹¹ Franz-Stefan Gady, "China Will Supply Pakistan With 110 New JF-17s," in *The Diplomat*, April 28, 2015, <http://thediplomat.com/2015/04/china-will-supply-pakistan-with-110-new-jf-17s/>, accessed on June 23, 2016.

¹² Dave Majumdar, "Need a Cheap Fighter Aircraft? The JF-17 Might Work," in *The National Interest* website, November 13, 2015, <http://nationalinterest.org/blog/the-buzz/need-cheap-fighter-aircraft-the-jf-17-might-work-14336>, accessed on July 23, 2016.

¹³ John Irish, "Pakistan wants air force upgrade for prolonged militant fight," Reuters, April 7, 2016, <http://www.reuters.com/article/us-pakistan-airforce-militants-idUSKCN0X417E>, accessed on July 23, 2016.

¹⁴ Dave Majumdar, "Need a Cheap Fighter Aircraft? The JF-17 Might Work," in *The National Interest* website, November 13, 2015, <http://nationalinterest.org/blog/the-buzz/need-cheap-fighter-aircraft-the-jf-17-might-work-14336>, accessed on July 23, 2016.