

# SECOND to NONE

QUARTERLY

**Faithful Warrior**  
A Tribute to PAF 'Work Horse'



**EXCLUSIVE**  
Brothers in Arms

**Władysław Turowicz**  
A 'Pole Star' of PAF

**PAFWA Educational System (PES)**  
Shaping the Future of Pakistan

**CPEC**  
Opportunities in Aviation

**IAF's Procurements**  
A Threat to Regional Peace



**HEAVY METAL**



**Ever-Evolving**

**UK COMBAT AIR**





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**SECOND to NONE**  
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QUARTERLY



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# EDITORIAL TEAM

# from the Editor-in-Chief



**T**here's no denying it, these are testing times. Humankind has not seen such a global menace as COVID-19 in a long time. As every single person struggles to cope with the perpetual uncertainty, we must rally as a nation. That was what we had in our sights whilst curating this edition, to look back to our resilient past and promising future.

The lead story provides an overview of evaluation of Pakistan's air power capabilities and the available wherewithal at the disposal of three services to deal with contemporary challenges. Another feature chronicles the F-6s and what earned them the status 'The PAF workhorse'. Since aircraft and equipment can only be as capable as their handlers, we shall narrate the tale of the highly competent Air Cdre Władysław Turowicz, a former polish

air force officer, who proved himself to be a true Pakistani. The services rendered by No 10 Squadron are also chronicled, with men who have perfected the art of air-to-air refuelling. Fortunately, inspirational stories are not just to be found in the nation's past. Even in these tumultuous times, we have stories of the human spirit overcoming all odds to achieve what they set out to. One of such stories is that of Rashidabad, brainchild of Air Cdre Shabbir Ahmed Khan. It is an elevating tale of how an 'iron will' can make something useful out of the most shattering of tragedies. Although Rashidabad's epic spans decades, we also have the tale of senior technician Muhammad Sajjad, which lasted for no more than 18 hours. A man who braved against all odds while holding on to dear life, adrift in the high seas. Add to this, one teacher's dream to reimagine preschool

learning at the PAFWA Educational System (PES) Primary School. Read about a school, where children move around, choose their own activities and the love of learning is instilled in their young minds.

However, inspiration can be rendered futile without a realistic assessment of the current circumstances. With a single virus disrupting the world order as we see it, individuals as well as entire nations hurry to cope with the immense threat to humanity. We explore how, as the world order is disrupted, old powers stagger and new contenders rise to affirm themselves. An extremely worrisome by-product of these changing dynamics is the accelerated arms race started by our hostile neighbour, India. On the other hand, technology takes a huge leap forward in the form of 5G networks, which the author

elaborates with a fictitious anecdote of how life could be in 5G lane. Always endeavouring to bring innovation to our publication, we have introduced a new segment of important aviation news from around the world. I hope our worthy readers would like this new addition to the format.

All in all, to declare that the issue you hold in your hand is interesting, would be an understatement.

**Happy Reading!**



*Muhammad Ali*

Air Cdre (R) Muhammad Ali, SI(M)  
Editor-in-Chief  
email: [chiefeditor@secondtononepaf.com](mailto:chiefeditor@secondtononepaf.com)

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**3 EASY WAYS TO ORDER**

# PAKISTAN'S AIR POWER BROTHERS IN ARMS



“Air Cdre Kaiser Tufail (Retd) presents a brief analysis and evaluation of Pakistan’s air power capabilities, and provides an overview of the available wherewithal to deal with contemporary challenges. In addition to PAF, it touches upon the capabilities of Army Aviation and Naval Air Arm. The main thrust is on PAF’s fleet modernization program and focuses on air-to-air and air-to-ground stand-off weapon delivery capabilities whose importance was highlighted in ‘Ops Swift Retort 2019.’ Fifth-generation fighter, transport, tanker, combat search & rescue and electronic warfare capabilities are also touched upon, within constraints of discretion. An overview of ground and airborne radars is also provided. The varied fixed wing and rotary wing assets of Army Aviation and Naval Air Arm are briefly discussed.”



Armed to  
Teeth-A pair  
of PAF F-16  
Block 52 on  
an operational  
training  
mission.  
(Photo:  
Air Cdre (R)  
Hamid Faraz)



Hovering in style- A PN Sea King comes in for landing (Photo: PN website)



A taste of PAF hospitality- SPADA 2000. (Photo: PAF Archive)



AH-1 Cobra-Strike platform for the Pak Army’s air arm. (Photo: Awais Lali)

## Pakistan Air Force

Having risen from almost token beginnings, Pakistan Air Force transformed itself into a combat hardened air force in a very short period. It has managed to keep the aircraft fleet fully operational at all times, despite repeated sanctions by its principal hardware supplier. Its small size belies its strength, which is buoyed by well-trained manpower imbued with a high state of morale and self-discipline.

With regard to weapon systems, PAF is well on the way to modernization of its fleet to the so-called 4+ generation of fighters, though half of it still includes F-7P/PG (Chinese derivatives of the early model MiG-21F) and Mirage III/V that first flew in the mid-fifties. The Mirages have had a long service in PAF, which began in 1968. Out of a total of 200 Mirages that have flown in PAF, 96 were purchased new, while 104 were acquired and refurbished from ex-Australian, French, Lebanese and Libyan

stocks. Over 60 non-airworthy Mirages obtained from Australia, Libya and Spain were cannibalized for spares, and continue to sustain the fleet as they soldier on beyond the fifth decade. More than a dozen different sub-types of Mirages have been modified to perform specialist roles including Forward Looking Infra-Red (FLIR)-aided night strikes and precision stand-off bombing.

The F-7Ps inducted in 1988, have served in the point defence intercept and close air support roles. As a nifty fighter that is fairly tolerant of mistakes, it has also performed usefully for operational conversion of

novice fighter pilots. More than a 100 F-7Ps had been procured till arrival of the much-modified F-7PG in 2001. The new version, with a more powerful engine, double-delta wing planform, and maneuvering flaps vastly improved upon the performance of its progenitor. The year 2001 also marked the retirement of the aging F-6, of which 260 had seen service in PAF, spread over 35 years.

“The JF-17, in its Block III iteration (with AESA radar, HMD/S, additional sensor station, and integral electronic warfare suite) is expected to be the workhorse of PAF over the next two decades, at least.”

PAF’s ongoing fleet modernization program aims at a two-type fighter inventory, including

F-16A (MLU)/F-16C (Blk 52), and more than 200 Pak-China JF-17 Thunder. The program entails an ongoing replacement of the F-7P/PG and Mirage III/5 with the JF-17. The JF-17, in its Block III iteration (with AESA radar, HMD/S, additional sensor station, and integral electronic warfare suite) is expected to be the workhorse of PAF over the next two decades,



Left: The only replacement for a Mirage has to be another Mirage. (Photo; Awais Lali)

Bottom Left: One of the most dramatic PAF Jets of the 1990s and 2000s was and still is the F-16- Armed to teeth in Air-to-Air role, an F-16 C Block 52, gets ready for take-off. (Photo: Awais Lali)

Center: Nerve center in the air-A PAF UAV takes off from unidentified location. (Photo: Awais Lali)

Bottom Right: Blinding the adversary- DA-20 'Blinder' gets airborne for ops mission. (Photo: Alan Warnes)



at least. In the interim, design work on a fifth generation fighter continues under the Project Azm (Resolve) that was launched in early 2018.

Significant air-to-ground capabilities of both the F-16 and JF-17 rest on their state-of-the-art Sniper and Asel targeting pods. These pods allow aircrews to detect, identify and engage targets outside the range of most enemy air defences. The pods incorporate a high definition FLIR-seeker, as well as visible-light HDTV, laser spot tracker, laser marker, video data link, and a digital data recorder. The FLIR allows observation and tracking through smoke and haze, and in low light or no light conditions. The video of the target can be shared with formation members, or directly with army formation commanders in real time through data link.

A modernized PAF featuring a full-fleet BVR intercept capability, with data-link support from ground and airborne early-warning radar platforms, targeting sensors for day/night precision attack, integrated electronic warfare suites, and an array of stand-off weapons against land and maritime targets, is expected to take shape within a decade. With the added ability of the JF-17 and Mirage III/V to launch cruise missiles having conventional or unconventional warheads, PAF has unequivocally moved beyond the largely tactical role it had in the past.

Transport aircraft for combat support operations include C-130B/E and CN-235. Rapid deployment of combat units to their forward locations during any contingency is the most vital aspect of these operations. Il-78 aerial tankers provide in-flight refuelling to Mirage III/EA and JF-17 aircraft employing the probe-and-drogue method; the huge tankers can also perform a useful heavy-lift or over-sized cargo transportation role.

Dassault DA-20 Falcon electronic warfare aircraft provide radar and radio communications jamming, and other electronic support measures. A small element of AW-139 and Mi-171 helicopters provides aircrew combat search and rescue (CSAR) service at each flying base. The



**Above: Taking the skies of the 21st century by storm - A pair of JF-17 Thunder configured in Air-to-Ground role race towards weapons firing range.**  
(Photo: Air Cdre Hamid Faraz)

**Bottom: In times of war they fight. In times of peace they train to fight - A pair of F-7PG aircraft equipped with variety of weapon loads banks right for an operational mission.**  
(Photo: Air Cdre Hamid faraz)

older SA-319 Alouettes have been assigned a training role, pending their eventual phasing out. For pilot training, PAF uses the locally manufactured Super Mushshak primary piston trainer, Cessna T-37 basic jet trainer, and the Pak-Chinese K-8 advanced jet trainer which replaced the FT-5 (dual-seat MiG-17). The PAF Academy aerobatics team Sherdils performs air displays on the K-8. Unmanned Aerial Vehicles (UAVs) continue to supplement manned fighters for reconnaissance missions. Their ability to stay aloft for long durations, and transmission of reconnaissance imagery to field formations through data link, are seen as major capability upgrades. The success of the COIN campaign in terrorist hideouts near the Afghan frontier has



been, in large part, due to the vastly improved situational awareness for troops on ground as well as aircrew in the air.

Defence of Pakistan's air space is the responsibility of PAF's Air Defence Command, with surveillance, identification, and fire control orders being within its sole ambit. Airspace is surveilled by airborne, as well as ground-based early warning radar systems. SAAB 2000 Erieye and Chinese ZDK-03 Airborne Early Warning & Control (AEWC) aircraft provide over-the-horizon surveillance in the mountainous areas of the north, as well as vast stretches of the Arabian Sea. An assortment of Lockheed-Martin TPS-77, Westinghouse TPS-43G, and Chinese Nanjing YLC-2 radars provide ground-based surveillance at medium to high altitudes, while YLC-6 and Siemens MPDR-45/60/90 radars cover low altitudes. The low-budget, 'eyes and ears' Mobile Observer Units are used to plug in the gaps in areas where terrain or logistics resupply constraints preclude deployment of radars. The inputs from this complete array of sensors are fed through several Generic Mission Control Centers, to the four fully automated Air Defence Sectors for further kinetic action, as required.

The three services have their own terminal defence weapons. PAF utilizes the vehicle-mounted Spada 2000 surface-to-air missiles (SAMs), along with a mix of Mistral and the locally developed Anza shoulder-fired missiles, for defence of air bases and radar sites. The air defence missiles at PAF bases are also supplemented by the Army's radar-controlled AAA. The Army covers its deployed field formations with the LY-80 SAMs, along with Anza and Stinger missiles. The Navy provides cover to its shore establishments with the Mistral and FN-6 missiles.



**Top: The Back Bone of EW Wizardry-A Karakoram Eagle ZDK-03 and SAAB 2000 'Erieye' during a Pak Day Fly past-2018.** (Photo: Air Cdre Hamid Faraz).

**Center: Art work in the skies- PAF C-130 fleet has remained the backbone of PAF air transport operations for decades.** (Photo: RIAT)

**Left: Providing extra reach Reach- IL-78 is used in multiple roles in PAF.** (Photo: Awais Lali)

### Pakistan Naval Aviation

The PN's land-based Naval Air Arm was established in 1975 as a result of lessons learnt after the 1971 war, when the PN surface fleet took serious losses in the absence of dedicated maritime patrol and rapid response platforms, to deal with evolving threats at sea. The air arm focuses on maritime patrol, anti-surface vessel warfare, and anti-submarine warfare with the help of fixed-wing aircraft, as well as helicopters. All three roles are comprehensively performed by the Harpoon-armed P-3C Orion, whose reach extends over vast stretches of the Indian Ocean and the Arabian Sea. The specially configured ATR-72 can perform maritime patrol as well as ASW, while the legacy Fokker F-27 performs maritime patrol tasks, albeit over shorter ranges. ASV warfare in high-threat environments – like an enemy surface task group defended by fighter

aircraft – is conducted by a squadron of PAF's latest JF-17s, equipped with the C-802 anti-ship missile. It was recognized that not only did the special skills required to operate and maintain a multi-role fighter lay with the air force, but the optimal utilization of such a platform could not be justified were it to be utilized in a single role by the navy. The existing arrangement has worked out to the satisfaction of both services for over 35 years, when PAF's

AM-39 Exocet-equipped Mirage V PA-3 first assumed the maritime attack role. Excellent cooperation exists between the two services, and PAF regularly participates in PN exercises. An important role of defensive screening of own naval task force against surface and sub-surface threats, is performed by a squadron each of Harbin Z-9 (in the ASW role) and Westland Sea King

“ Harpoon-armed P-3C Orion, whose reach extends over vast stretches of the Indian Ocean and the Arabian Sea, is the most lethal aerial platform of Pak Navy ”

• Above: Going into hostile territory with confidence- Sea King MK-45/45A helicopters of PN are used in ASV and ASW roles. (Photo: Rana Shoaib)

• Bottom: Linchpin of PN Operations - P3C 'Orion' of PN can carry multiple weapon load of anti-ship missile Harpoon and anti-submarine Torpedo / Depth charge. (Photo: PN website)



helicopters (in ASV and ASW roles). Search and rescue, and command liaison tasks are performed by SA-319 Alouette helicopters. The PN frigates are equipped to embark one helicopter each for any of the selected tasks. The PN helicopters have also played a noteworthy role in periodic flood relief operations in the coastal areas of Pakistan. BN Defender aircraft are utilized by the PN-controlled Maritime Security Agency for enforcement of maritime law in international waters, as well as policing of Pakistan's exclusive economic zone.

### Pakistan Army Aviation

Beginning as an Air Observation Post (AOP) flight of Artillery in 1947 with just four Auster Mk-V aircraft, the unit was established as a separate Aviation Corps of Pakistan Army much later, in 1976. During the 1965 and 1971 wars, this aviation component provided sterling combat support with the L-19 Bird Dog AOP aircraft, and OH-13 Sioux and

• Right: Advantage of surprise in a game of life and death lies with Breguet 1150 Atlantic aircraft of Pak Navy. (Photo: PN website)

• Bottom: Racing to Rescue-The primary roles assigned to Z-9C helicopters of PN are ASW and Reconnaissance along with infinite secondary roles such as SAR, MEDEVAC etc. (Photo: SZZ Photography)



Mi-8 helicopters. The Corps was raised to the status of a Command in 1988, with a General Officer Commanding heading the Aviation Command. It has grown into a sizeable supporting arm of the Army, with a mix of helicopters and fixed-wing aircraft.

The most lethal component of the helicopter inventory are the gunships which include AH-1F/Z Cobra, AS-550 Fennec and Mi-35; additional Turkish T-129 are on order. The gunships have seen effective action in COIN operations in Pakistani tribal areas abutting Afghanistan.

Troop and freight transport helicopters include the AW-139, Bell 412, Mi-17/171, and SA-330 Puma. During peacetime, these helicopters have been immensely useful in disaster relief operations like floods and earthquakes, which are not infrequent in the country. Light utility helicopters include the AS-350 Écureuil, Bell 206 Jet Ranger, SA-319 Alouette III, and SA-315 Lama. Some of these light helicopters are also operated by para-military forces like Coast Guards, Rangers and Frontier Corps, but maintained by Army Aviation. Helicopter training is done on

Schweizer 300 and Enstrom 280.

The fixed-wing inventory of the Army Aviation includes several types of piston, turboprop and executive jets of the 'general aviation' category. They are used mostly for the purpose of transportation of senior formation commanders for meetings with the General Staff at GHQ. One of the noteworthy fixed-wing aircraft is the locally-manufactured MFI-17 Mushshak







A pair of TAI/AgustaWestland T129 ATAK Helicopters of Pak Army head towards Operational area. (Photo: TAI)

primary trainer, of which over 100 continue to operate since their induction in the Army in 1976. Besides primary training of pilots, it serves useful operational tasks of forward air control, artillery spotting, and light communications.

The Army Aviation has to its credit several successful UN peace-keeping deployments in Burundi, Sierra Leone, Somalia, and Sudan. It has also carried out some daring high altitude combat support and rescue missions in the mountainous areas of northern Pakistan.

#### Other Assets

Civil Aviation assets, including all civil aircraft registered in Pakistan, are liable to be mustered during any emergency, as per the country's legal stipulations. In the past wars, aircraft of the national airline were used for flying-in military equipment and spares from other countries.

Aircraft were also put at the disposal of the navy for maritime reconnaissance at a time when the Naval Air Arm did not exist. In any future war, the Ministry of Defence can count on about two dozen airliners and twice as many general aviation aircraft to be available for transportation of men and material, for search and rescue, and for reconnaissance purposes.



Built to operate on the outer envelop of risk- A pair of Pakistan Army's SA 330 Puma Helicopters takes off for an operational mission. (Photo: Waqas Shah, Airliners.net)



Above: Jobs don't come tougher for helicopters than transporting troops and delivering relief- A Pak Army Mi-35 gunship, attack helicopter takes off for an operational training mission. (Photo: Awais Lali)

Right: Old is Gold- We can reach the places, we can reach by no other means, by Mi-171 of Pak Army. (Photo: Rana Shoaib)

Left Page Bottom: 'The Squadrons are Coming'- The lethal, war tested arsenal of Pak Army, AH-1F/Z 'Cobras' take off from home base. (Photo: Awais Lali)

#### Conclusion

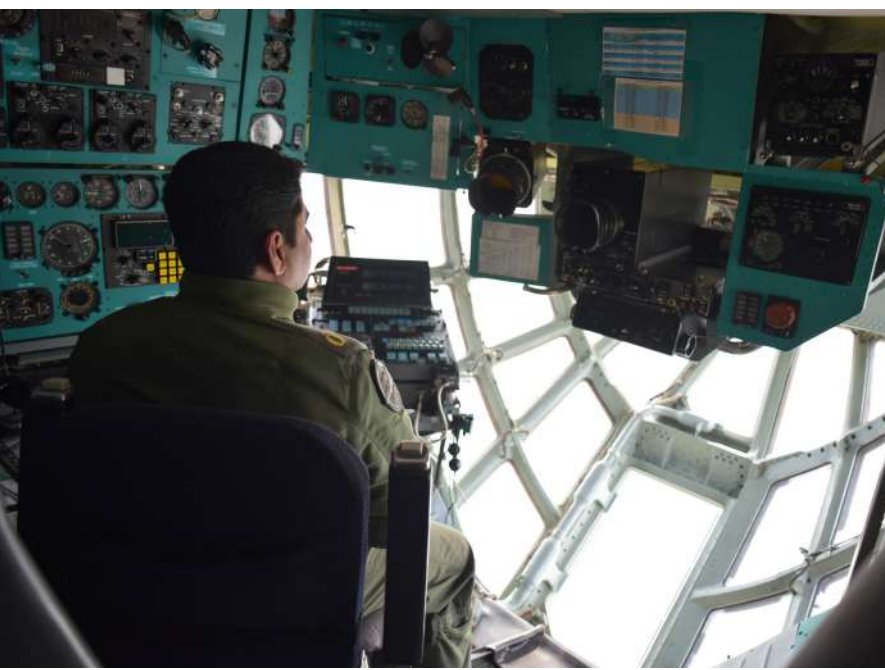
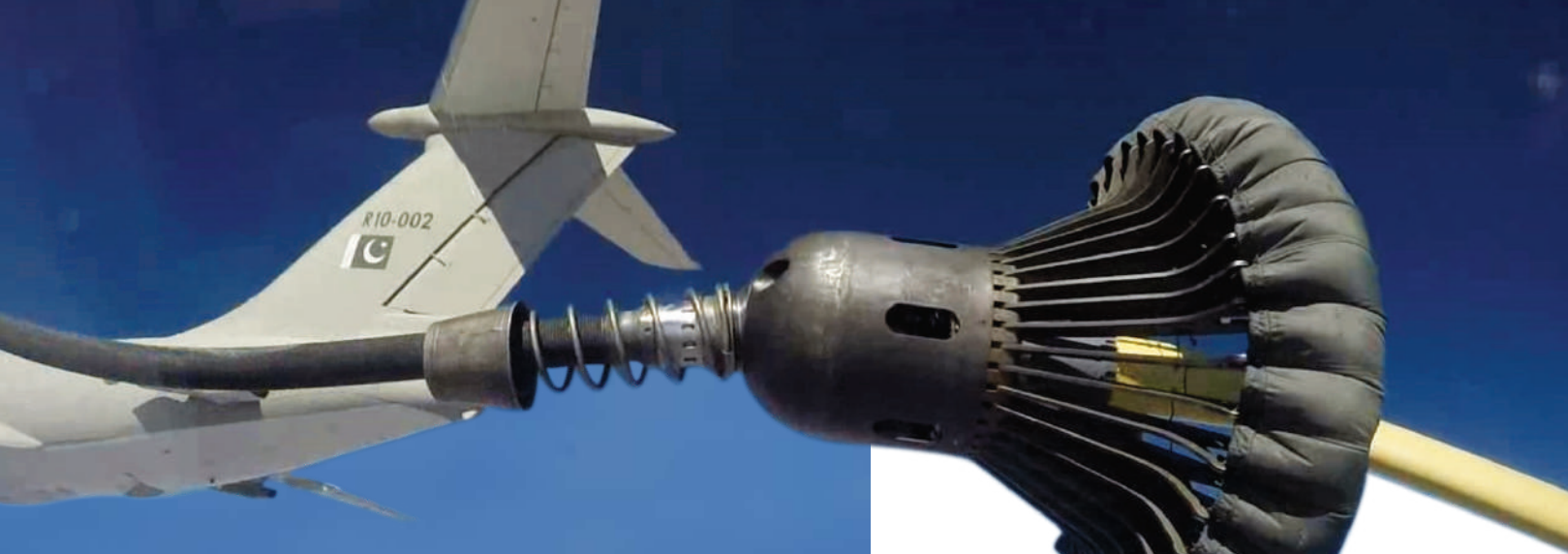
As a pivotal enabler of ground operations, PAF has the ability to inflict casualties on enemy forces at stand-off ranges with precision weapons, thus preventing own troops from being exposed to the enemy's greater capacity of direct ground fire. The accuracy and increased level of intensity of air intervention now possible, allows a higher operational tempo that is highly desirable in a short conventional war. While support to surface forces remains an integral part of PAF's doctrine, the service remains cognizant of the need for achieving optimal control of the air over the area of ground or maritime operations. An overall favorable air situation, along with local air superiority in the area of critical battles, is well within the capabilities of today's PAF. All components of Pakistan's air power remains cognizant of the changing dynamics of aerial warfare, and is well up to the challenge of sophisticated and technology-intensive demands it is likely to face in the coming years.



# HEAVY METAL

“There are not many things in this world that are indispensable. This bird comes as close to it for an aeroplane. What the IL-78 lacks in sleekness of a high profiled jet fighter, more than makes up for at heart. This Russian full metal body air-to-air refueler is PAF’s do-anything-aircraft. The No 10 Sqn of PAF, fly the IL-78 to carry out specialized missions transporting over-sized cargo that no other aircraft in PAF fleet can lift. Most importantly, they serve as mid-air filling stations to JF-17 Thunder and Mirage fighter pilots, sending them longer distances without making pit stops. It is a heart-in-your-mouth maneuver and a hard skill set to get right. “Air-to-air refueling is a game changer for the PAF. With this resource, augmented with PAF arsenal, the adversary keeps its aircraft carrier farther in the ocean. It has defeated the effective range of the carrier, and forced the enemy to re-evaluate their capability,” says Wg Cdr Farhan Baig, Captain of IL-78.”





**P**

akistan Air Force may not have bragging rights to the world's best air-to-air refueler. But its senior leadership places heavy demands on the IL-78 and its crew to become an elite squadron, worthy of serving the PAF. For which, the crew of IL-78 don't mind rolling up their sleeves.

"Whenever there is an urgent demand, the IL-78 can get airborne within minutes," adds the Captain of this big bird, standing under its nose at Nur Khan Air Force Base on a hazy morning where constant engine roar hangs over the tarmac.

The look of this high-winged tanker is one that stays with you. Wide body, characteristic drooping wings, four jet engines to get the "Big Boys" airborne; heavy duty landing gear, and high mounted tail fin to give it more maneuverability. A sneak peek inside, the two cockpits are packed. Every available inch dedicated to fuel, buttons and switches, and

Left: The IL-78 has been an essential element in every PAF venture since its induction, including Operation Swift Retort -2019 - the IL-78 was there. (Photo: PAF Archives)

Bottom: Flying is part of my life. Aircrew sit in two separate decks in this beast. (Photo: S Khalil)

Right Page Bottom: Air-to-air refueler and much more than that- A PAF IL-78 gets ready for take off from Istanbul, Turkey. (Photo: Airlines)



yoke for control. For its defence, it relies on its performance. When it is time to haul the mail, this heavy transport plane can airlift 80, 000 kilograms of awkward payload in its bloated belly.

"This is one of the most reliable planes. We deliver big things you cannot pack in cardboard boxes over long distances in a hurry. This is where we transported a large number of JF-17 Thunder aircraft from

China right here," the commander of the aircraft says gesturing to the fuselage of the aircraft.

The story of IL-78 began in 2005, when adversarial and security environment changed, such that Pakistan Air Force decided to acquire air-to-air refueling capability. To this end, PAF needed a special aircraft. This is where the IL-78 came in, and with it, its specialized expert pilots - and they don't

Above: The IL-78 fills a gap no other aircraft in PAF arsenal can. Resolutely safeguarding its aerial sovereignty, the IL-78 can refuel a dozen fighters and send them further. (Photo: PAF Archives)

Right: IL-78 crew- the proud men delivering the very best to the nation. (Photo: S Khalil)



get any better than the guys in the No 10 Squadron. This unit is dedicated to this highly important task.

Induction of IL-78 changed the direction of war as a force multiplier, says Wg Cdr Farhan Baig, the current squadron commander of No 10 Sqn.

"An air-to-air refueled aircraft can hold and secure a location for an additional hours, provided it doesn't run out of ammo," he adds. But in-flight tanking, using the drogue and probe method to keep fighters front-line ready, is one of the riskiest aircraft ops. There is no room for error and safety checks are doubly important. This was evident when PAF performed the first ever air to air refueling of the newly inducted JF-17 B (dual seat) model.

Bottom: When you see an IL-78 parked on tarmac for the first time, the first thing that strikes you is, it is unbelievably massive. (Photo: Air Liners)

## Fighting the COVID-19

The Pakistan Air Force has a proud history of helping those in need, whether in its own backyard or across borders thousands of miles away. Wherever, whenever help was needed Pakistan Air Force was ready. When no other country could help China, as the dangerous coronavirus pandemic spread, Pakistan was the first country to air lift life sustaining supplies to help the Chinese people.

Once again, the No 10 Sqn's airlift capacity and skill sets provided the dynamics to assist in relief efforts that have helped China recuperate. From March, up till now, the aircrew of No 10 sqn, have flown ten touch and go sorties and delivered 15 tons of medical supplies such as personal protective equipment (PPE), face masks and sanitizers at the neighbouring country's door steps. These sorties were no less tough and sensitive than the routine missions the No 10 sqn has performed before. And while, everyone airmen in the 10 sqn is a warrior, right now they are compassionately focussed on delivering aid to those in need.



The IL-78 navigated to given coordinates and rendezvoused with test pilot Flt Lt Wajihullah of No 14 Sqn, in the new dual seat. Both aircraft flying at twice the speed of a Formula One race car flat out, wajihullah of assumed pre-contact position under the left wing of the refueler.

"Mid-air tanking is one of the trickiest and most dangerous maneuvers any fighter pilot has to master," says Wajihullah. At 500 kph, he has to line up his jet and probe with the hose swirling from the wing of the refueler. During all his previous training sessions, he was hardwired to stay off the collision course, by maintaining a

1,000 feet distance from the other aircraft. However, that day he had to pull up 20 meters behind the tanker plane using reference points on IL-78. "It's against a pilot's instincts," he declares now relying more on visual flight rules (VFR).

**“ The IL-78 is the only heavy category aircraft in the PAF fleet. Besides refueling two jets in-flight simultaneously, it airlifts 2.5 times more cargo than a C-130 Hercules. ”**

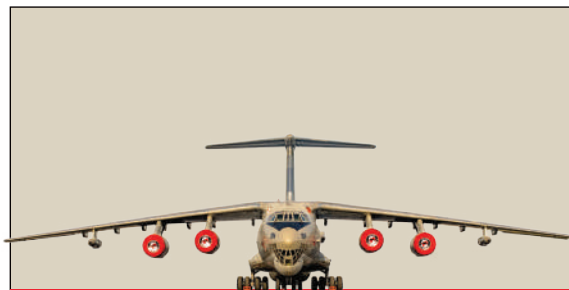
The hose looks like a shuttlecock. Despite the skirt design at its end to keep the drogue steady, bow air in front of JF-17 B pushes the hose up and away. "It was like threading a needle in a car on a bumpy road." Get it wrong, and the hose can smack in the side of the aircraft and damage it, compromising the mission, forcing the pilot to land.



Above: No margin for error in a multi-crew Cockpit. (Photo: PAF Archives)

Left: Anytime, anywhere - A PAF IL-78 sits on the tarmac of Urumqui, China in freezing temperatures. (Photo: Airliners.net)





## Specifications (IL-78M)

<b>Crew</b>	Six
<b>Capacity</b>	Max 100,000 kg payload (T-6 military jet fuel)
<b>Length</b>	46.59 m (152 ft 10 in)
<b>Wingspan</b>	50.5m (165 ft 8 in)
<b>Height</b>	14.76 m (48 ft 5 in)
<b>Wing Area</b>	300 m <sup>2</sup> (3,200 sq ft)
<b>Empty Weight</b>	72,000 kg (158,733 lb)
<b>Max Take off Weight</b>	210,000 kg (462,971 lb)
<b>Special Equipment</b>	3 x UPAZ-1M 'Sakhalin', (Unifitsirovaniy Podvesnoy Agregat Zaprahvki;— standardised suspended refuelling unit), refuelling pods; Two on pylons under the outer wings, and the third on the port side of the rear fuselage.
<b>Fuel Transfer Rate</b>	900 to 2,200 liters/min
<b>Powerplant</b>	4 x Aviadvigatel D-30 KP turbofan engines, 118 kN (27,000 lbf) thrust each

## Performance

<b>Maximum Speed:</b>	850 km/h (530 mph, 460 kn)
<b>Range</b>	7,300 km (4,500 mi, 3,900 nmi)
<b>Service Ceiling:</b>	12,000 m (39,000 ft)
<b>Thrust Weight:</b>	0.23



At a 5 kph rate of closure, the jet inches towards the hose and docks. It is pure piloting technique and anticipation. Once locked in, the IL-78 transfers staggering amounts of fuel within a matter of minutes - a 1,000 pounds per minute to be precise. Wajiullah set the bar for the optimal way of refueling the new JF-17 B model. Many air ops would be impossible without air-to-air refueling technology. That day before the crew of IL-78 rendezvoused with the Thunder, it had another mission - 12 fuel-hungry jets, flying in three formations needed refueling.

"A Mirage burns several litres every kilometer. It can cover a mile in the blink of an eye. Jets are so weighed down with bombs, they require copious amounts of fuel just getting off the ground," points out Wg Cdr Shaheer Shahid from the No 7 "Bandit" Sqn. The IL-78 pumps several thousands of pounds of fuel into the Mirages two at a time in minutes, faster than a normal petrol station does in 24 hours and the pilots continue patrolling the borders. With this capability, even deep air bases in enemy territory

**“The story of IL-78 began in 2005, when adversarial and security environment changed, such that Pakistan Air Force decided to acquire air-to-air refueling capability.”**



are within range. Jets can be refueled in-flight, penetrate, strike, return, get refueled again and land home safely, thanks to the 'range extenders'. The IL-78 is considered one of the most vital weapons in the arsenal of PAF.

The No 10 sqn also serves as PAF's war times transport unit. The air force has four IL-78 and they are kept busy doing a tonne of other things including carrying paratroopers and assisting the Pakistan Navy, in joint exercises. "It's not a typical IL-78 aircraft, which is solely dedicated for air-to-air refueling but a modified version to airlift cargo. The deployment time has been reduced to half, as was the case during Operation Swift Retort-2019 adds Wg Cdr Farhan Baig.

**IL-78- The Bird Itself**  
The IL-78's amazing size makes you wonder just how big things can get. It also makes you think that something that enormous isn't supposed to get off the ground. But its multiple crews fly it every day and it is just amazing, especially when it does not uphold the reputation as a sweet handling airplane. Getting



**Above: A perfect fit for the demands of Pakistan Air Force. PAF's largest cargo mover is engineered to haul the toughest and heaviest freight at a longer distance - battle ready troops, helicopters and humanitarian aid, in a short time. (Photo: PAF Archive)**

**Bottom: It must have turned heads when it first took off. (Photo: Awais Lali)**

on and off the ground requires definitive skills that set apart the pilots of No 10 Sqn from all others - the reason is its obvious size. It takes a lot of focus and preparedness. It wakes you up and gets adrenaline pumping. To say that its crew takes a beating is putting it mildly "As we say in the air force, just landing this beast is synonymous with taming a bull in a rodeo. Thrust reversers go on full blast, sound deafening, and there's rubber coming from tyres,"

Farhan Baig observes. Its crew describes the IL-78 as a very manual plane, role responsive to inputs. "Conventional aircraft including C-130, which pilots learn to fly with one hand on the sensitive stick or a yoke and the other on power functions. But controls of IL-78 are so heavy that we need a separate crew member with hands on the throttle. You cannot fly hands off."



That is manhandling the plane. It is not very forgiving," Farhan Baig said.

No 10 Sqn was formed on December 11, 2009. To fly IL-78 a pilot requires no less than 52 hours of ground studies, besides the four weeks of simulation flying. Farhan Baig was among the pioneering group of three crew members who were trained to fly the IL-78 after 37 hours of ground studies including simulation flying.

"Worse - our Ukrainian instructors did not even speak English," he quips. With 1,600 flying hours as Captain of a C-130 Hercules, Farhan Baig joined the No 10 Sqn as co-pilot.

The IL-78 is the only heavy category aircraft in the PAF fleet. Besides refueling two jets in-flight simultaneously,

it airlifts 2.5 times more cargo than a C-130 Hercules. Flying IL-78 has been a rich experience for pilots. A C-130 captain comes as a co-pilot on IL-78. The experience level is extremely high in this squadron.

The downside is that the IL-78 is an old aircraft from the 70s - manual and analogue. It gives very little chance for recovery. Every mission is challenging and you cannot lower the guard at any time. Yet the tanker crew is more keenly aware than any other of the tremendous responsibilities of their missions. They are proud of their achievements.

"We have the opportunity to serve fighter pilots - the finest source of pride in our careers. We are the first to go in and the last to come out," said Wg Cdr Farhan Baig.

An IL-78 fills up the foreground, standing on its 20 wheels, holding its t-tail proudly in the air flaunting its four gargantuan engines hanging off its massive wings. (Photo: Awais Lali)



# FAITHFUL WARRIOR

**M**eet the F-6, a fast and maneuverable jet fighter. Each engine let loose 7,000 kilograms of power as she took off and could climb to 30,000 feet from where the curvature of the earth can be seen blew, all in 20 seconds. It was a hugely powerful machine, with one purpose alone, to intercept any intruder that posed a threat to the Pakistan's air space. But trumped as a reasonable adversary before its induction into PAF, less so afterwards, the aircraft that promised much delivered little, despite its F designation. Its "striking" looks contained a litany of flaws, questionable design choices and unsatisfactory performance in its effective role, besides other inadequacies that became apparent in later years. In the event of an ejection seat failing, and it did, made the F-6 a death trap. Air Cdre Zahoor Sheikh, who has accumulated the most flying hours, some 1,800 on the F-6, not once turned on the most sophisticated radar ranging equipment before selecting weapons. "It was so inaccurate. Plus, switching it on caused other gadgets such as the radio to malfunction.



Was so much progress possible in the 1960s, that the Pakistan Air Force could transform the old-fashioned F-6, a machine at best, into a high performance weapon system? Many would probably not bet on it. But PAF made that bet. With four times slower roll rate than the F-16 and huge stall problems, the PAF poured in huge resources to mold the F-6 into a fighter, capable of destroying any insolent intruder foolish enough to approach its precious air space. It enhanced PAF prestige worldwide. "Taking care of this 'Faithful Warrior' was no job for a shade-tree air force. The F-6 finished in style. That's a performance unequal in the annals of aviation."

(Cover Page Photo: Peter Foster)

For some reason, no one ever bothered to fix it," he said. Yet this jet soldiered on for the next 35 years after induction only to become a potent symbol of PAF air power. Its ground up 130 plus modifications to transform the F-6 into a weapon system boasted of PAF greatness and ability in teaching the world that it is best at modifying planes. So grab a cup of tea as you read about the F-6, which your father and grandfather flew to war.

code named it, the "Farmer". During this era of the cold war, military technology developed at a rapid pace. Mig-15, the veteran of Korean War and Mig-17 that it developed into, were two of its precursors. The Mig-19 was the first mass produced supersonic aircraft in the world. It was designed in the early fifties and went into mass production in 1955. The rushed growth and developments in the Soviet military aviation industry soon led to the emergence of another far better fighter aircraft in 1956, the Mig-21. The Soviets thus stopped the production of Mig-19 in 1960. The Chinese had begun the licensed production of their J-6/F-6 in 1959. Owing to slower development in their aviation industry, a relative resource crunch and urgent requirements, they continued its production till 1981.



**Origin of F-6**

The F-6 story began almost 55 years ago at the height of the Cold War. The F-6, or in fact Mig-19, was the first supersonic fighter aircraft of the Soviet Union. The Chinese called their licence produced Mig-19s as J-6. Its export version was named F-6. And NATO



**PAF Selects the F-6**

Soon after the start of 1965 war, USA put an embargo on sale of weapons to both Pakistan and India. India did not have any significant military hardware of US origin, hence the embargo was to effect Pakistan only. Sensing an impending crunch, the military planners of Pakistan quickly diversified their sources of military hardware. PAF was the hardest hit by this embargo. As such, the acquisition of F-6 fighter aircraft from China was



Above: An aircraft of Operational Versatility-A FT-6 dual seat trainer which trained scores of PAF pilots for decades. (Photo: Peter Foster)

Left Page 1: Flying abreast with modern fighters of PAF. (Photo: PAF Archives)

Left Page 2: Wearing White Livery, an F-6 rolls down the runway with fully extended drag chute. (Photo: Peter Foster)

Left: PAF's shield against all adversaries. (Photo: PAF Archive)







### Top F-6 Veterans

Air Cdre Zahoor Sheikh	1731 Hours
Air Cdre Rehmatullah Khan	1706 Hours
Air Cdre Ch Qayyum Akhter	1611 Hours
Air Cdre Amjad Bashir	1544 Hours
Wg Cdr Kamran Malik	1426 Hours
Air Mshl Riaz ud din Sheikh	1415 Hours

a timely, logical and cost effective choice.

A contingent of around 60 personnel were sent to China in October, 1965. The members consisted of pilots, engineers and technicians. It was a clandestine operation. They travelled via Ceylon and Canton as civilians and did not wear uniforms throughout their stay at a training facility close to Beijing.



The training was challenging. All the books and technical manuals were in Chinese language and

all that these people could gather were their notes in English. Everyone had his own understanding and noted as he understood. This resulted in a lack of standardization both in engineering and operational practices, which continued in the initial few years of F-6 operations in the PAF. Later, PAF personnel had to learn Chinese, which subsequently helped in understanding and developing standardized training and working manuals.

#### Ferry Flights

The delivery of the initial batch of 75 F-6s from China began in

Dec 1965. Ferrying from Hotian, China, Wg Cdr Sadruddin and Flt Lt Khalid Iqbal landed the first two F-6s at PAF Base Sargodha (now Mushaf Air Base) on the afternoon of 20th December. They were the lead element of 12 F-6 aircraft that had taken off from Hotian that day in a discreet operation. No one knew at Sargodha that an F-6 ferry was to happen that day but when the formation arrived there was a huge gathering at the base, ready for the reception. A large number of F-6s were also shipped from China in crates. They were assembled at PAF Base Faisal and flown up country to Sargodha. The ferry operations from the

Above: Pound for pound, the F6 packs a punch. (Photo: PAF Archive)

Right Page Above: PAF hoped never to use the F6 in anger. When it did, the PAF had the aircraft to do the job. (Photo: Peter Foster)

Bottom: Its aggressive capabilities played a major role in the defeat of the enemy-Armada of F-6 painted in silver livery sits on the tarmac of an operational base. (Photo: PAF Archive)



neighbouring country were conducted over the next 15 years. The last ferry operation was undertaken in 1980. All ferry operations were undertaken from Hotian, a small town in western China on the edge of Taklamakan desert. The ferry itself was an exciting flight that included the challenge of crossing the Himalayas. Weather was the most serious consideration in these operations besides terrain. Sandstorm and thunder clouds were a frequent phenomenon. The weather forecasting services were not quite

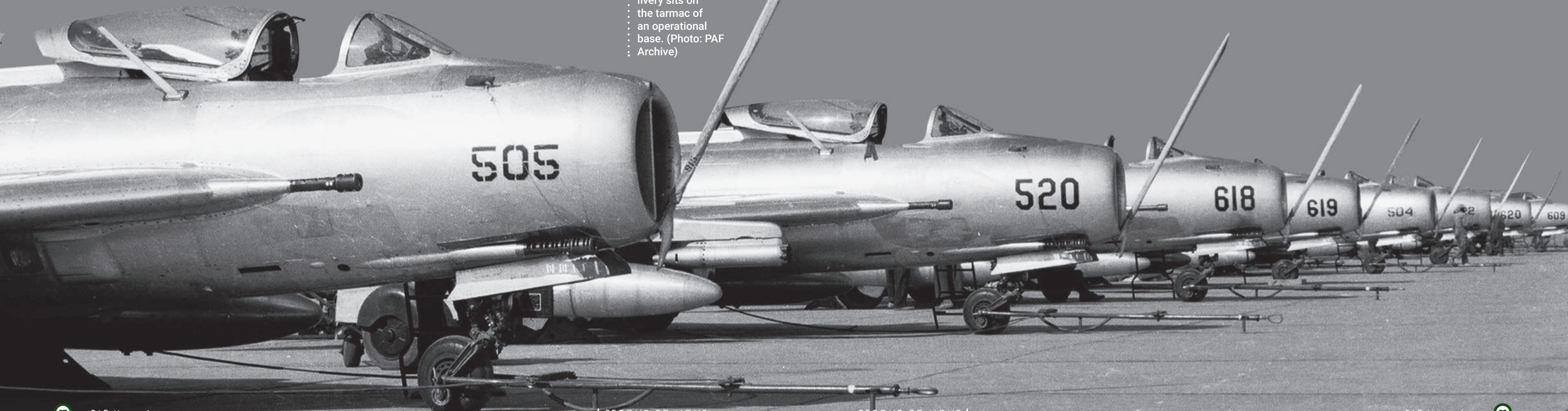
developed at that time. As such PAF's C-130 transport aircraft was used for weather reporting and radio relay. Pilots had to be appropriately dressed for crossing over the snow covered mountains and briefed for all untoward situations. The excitement of crossing over the Himalayas, seeing the K-2 and the relief of seeing the river Indus still lives in their memories.

#### F-6 in PAF Service

How an aircraft that did a 90 degrees turn

in a second, compared with an F-16 that does a 360 in same time, could survive, let alone fight, was one of the enduring mysteries. In all, a terrifying 260 were inducted from 1966 to 1980 to equip ten of its fighter squadrons. No 23 Squadron was the first PAF fighter squadron to be equipped with F-6 aircraft on 8th Feb 1966, an interestingly was also the last to bid farewell to this

faithful warrior. The F-6 was not built for the faint hearted. It was a real stick and rudder type flying, often unresponsive at





Left: INSET: Builder of captaincy in young men who had to manage the F6 from the time they gunned its engines into life (Photo: PAF Archives)

Right Page Bottom: PM Zulfikar Bhutto along with AM Zafar Chaudhry, C-in-C PAF inspects the line up of F-6 aircraft at PAF Sargodha. (Photo: PAF Archives)

Bottom: Twin - engine monster armed with AIM-9B remained a potent aircraft for decades. (Photo: PAF Archives)



low speeds. No matter how many hours pilots had in it, this jet kept finding ways to challenge them. "Still, the F-6 was a pilot's airplane. You could feel the aircraft talking to you through all those manual controls. We used to feel part of this jet. It pushed us to become better," said Air Cdre Amjad Bashir, veteran pilot of F-6. The air force operated the F-6 without a dual seat trainer until 1980. It relied on UMig-15 for initial conversion and instrument training.



Along with this, the absence of a flight simulator was another serious impediment in standardised training, in familiarizing controls and to practice basic cockpit procedures and emergency drills. This was indeed a challenging time. The F-6 was a more challenging machine to fly compared with modern planes that have carefree handling, said Air Cdre Amjad Bashir. "It involved intense pilot workload. Simply put, it separated men from boys. Hence for its first ten years, the F-6 was treated with caution and respect until pilots gained more operational and technical experience on it. Initially, it was an exclusive club open only to experienced fliers who were converted to this aircraft. However, with the phasing out of F-86s and having flown the F-6 for a decade, in 1976, PAF started inducting new graduates from Fighter Conversion Unit on to F-6. It was a well thought out undertaking, although strewn with anxious moments.

The F-6's twin engines could develop more than 15,000 lbs of thrust each, punching the F-6 higher than Mt Everest in a matter of seconds. To produce that incredible engine thrust meant massive fuel consumption. To put it in layman terms the average car fuel tank will be empty in 5 seconds in this machine. High fuel consumption and a relatively lesser fuel capacity restricted the flight time of the F-6. The sortie duration varied between 25 to 55 minutes depending upon the fuel configuration and type of mission. Pilots had to prudently plan their



The F6 formed PAF's deterrent force, protecting this country from enemy attacks (Photo: PAF Archives)

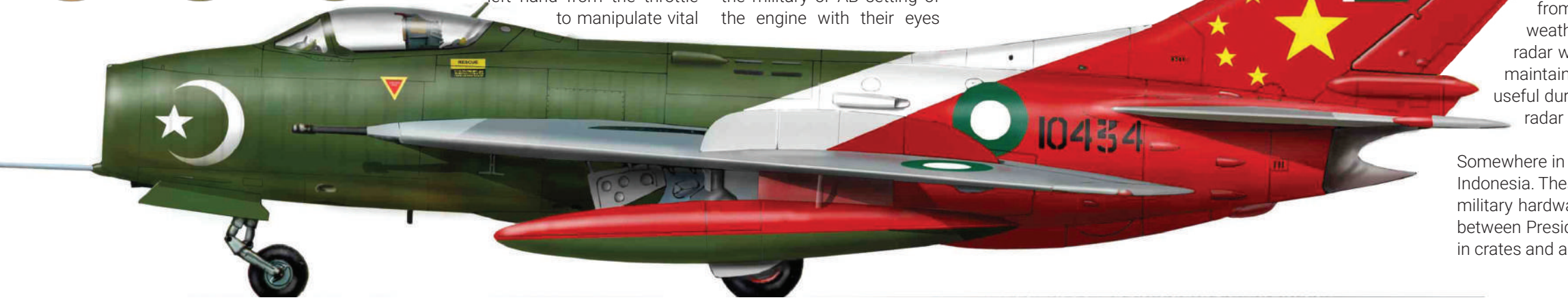


### F-6 in PAF Squadrons

Squadron	Service Years
No 23 Squadron	1966-2002
No 25 Squadron	1966-1995
No 11 Squadron	1967-1982
No 14 Squadron	1972-1985
No 15 Squadron	1973-1993
CCS	1976-1992
No 17 Squadron	1977-2001
No 19 Squadron	1977-1989
No 26 Squadron	1981-1984
No 20 Squadron	1986-1987

### Pilots of the first ferry of F-6s from China

1	Wg Cdr Mian Sadruddin	8	Flt Lt Akhtar Rao
2	Sqn Ldr Sharbat Ali Changezi	9	Flt Lt A H Malik
3	Sqn Ldr Asghar Ali Randhawa	10	Flt Lt Zaheer
4	Flt Lt S K Kamal	11	Flt Lt Rehmat
5	Flt Lt Ansar	12	Flt Lt Khalid Iqbal
6	Flt Lt Akhtar H Khan	13	Flt Lt Khalid Latif
7	Flt Lt Siraj Chishti		



use of after burner (AB) in air combat missions. Just five minutes of AB use would force the pilot to start looking at the fuel gauge and begin thinking of his recovery. The concept of energy manoeuvrability had "fuel in the tanks" a much higher premium for F-6 pilots besides "height" and "speed". The Air Traffic Controllers (ATCOs) of 70s and 80s recall that among all fighter aircraft of the PAF the F-6 had the maximum episodes of landing with minimum fuel. PAF, therefore, had attempted to increase fuel capacity of F-6. A gondola (under belly) integral fuel tank was fitted like the British Lightning aircraft. But this did not succeed. Bigger drop tanks were also introduced, which did increase the fuel capacity but at the cost of manoeuvrability of the F-6. With a higher weight and drag and lower "Gs" limit, these tanks were good only for ground attack or ferry flights.

Despite possessing a cuddly aesthetic, the F-6 was a killer. It was not an easy jet to shoot down even though in the absence of an on-board air-to-air radar, the air combat in an F-6 had to be visual. Whosoever, gained sight of the adversary first had higher chances of success as he could execute his planned tactic first and achieve surprise. The concept of HOTAS (hands on throttle and stick) had not come into vogue by that time and pilots had to lift their left hand from the throttle to manipulate vital

switches and buttons. A popular piece of advice at the time from the F-6 veterans to the younger pilots was "Lose sight lose fight". Pilots could not afford to look inside during crucial moments of air combat. Hence they had to know the F-6 cockpit like the back of their hands. All the cockpit switches, lights, indicators and gauges were marked in Chinese. While the F-6 RF (Rebuild Factory at Kamra) had broken into the writing technique of Chinese cockpit lights by placing appropriately captioned negative films under the light cover, special decals had to be made in English to read the instruments and controls correctly. PAF had several types of fighter aircraft in its inventory. Pilots in instructional, command or staff positions flying the western aircraft concurrently had to be watchful in cockpit drills while flying the F-6. There was the training regimen of blindfold cockpit checks. The experienced pilots could easily select the desired weapon, operate flaps, select and deselect the military or AB setting of the engine with their eyes

**“In 1988, Pakistan gifted two squadron strength of F-6 aircraft along with FT-6 trainers and related equipment to Bangladesh to further enhance the brotherly relations between two friendly countries.”**

### Aerial Kills by F-6 During 1971 War

Date	Base	PAF Pilot	Squadron	Victim Aircraft	Place
04121971	Risalewala	Ft Lt Javed Latif	No.23 Sqn	SU-7	Risalewala
04121971	Mianwali	Ft Lt Qazi Javaid	No.25 Sqn	Hunter	Sakesar
05121971	Mianwali	Wg Cdr Saad Hatmi	OC No.25 Sqn	Hunter	Sakesar
05121971	Mianwali	Ft Lt Shahid Raza	No.25 Sqn	Hunter	Sakesar
07121971	Sargodha	Ft Lt Atique Sufi	No11 Sqn	SU-7	Samba
08121971	Risalewala	Wg Cdr SMH Hashmi	OC No.23 Sqn	SU-7	Jaranwala
14121971	Sargodha	Ft Lt Aamer Sharieff	No11 Sqn	MIG-21 claimed	Shakargarh

**Left Page 1: AM Nurkhan taking stock all by himself. (PAF Archives)**

**Left Page 2: ACM Mushaf Ali Mir poses with veteran F-6. (Photo: PAF Archives)**

**Left Page 3: All lined up during F-6 retiring ceremony at PAF Samungli. (PAF Archives)**

**Left Page 4: A Historical Picture: All F-6 veterans pose with Legendary AM Nurkhan at the retiring ceremony of F-6 aircraft. (Photo: PAF Archive)**

glued to the adversary. This was their secret of success besides experience and confidence to maneuver the F-6 at low speeds with flaps and rudders.

The only on-board nav-aid on the F-6 was the basic radio compass which, for reasons, would readily become erratic with the appearance of clouds. So the F-6 pilots had to memorise maps and know their flying areas well. "Local and General Lost Procedures" were an important part of the flying protocols. Periodic drills of recovery through radar assistance were routinely practiced to not only keep the skills of the radar controllers honed but to also give confidence to the F-6 pilots. Despite all this the incidents of F-6 pilots getting unsure of their ground position were not uncommon. "Imagine how much faith you must have in yourself, in your skills and in the plane to do



**The F6 bites enemy jets during relentless air battles (Gp Capt S M A Hussaini Painting Archives)**

something like that on a daily basis. This is besides the fact that it took sheer guts to control this beast," Gp Capt Mansoor Mehmood quipped.

Luckily the limited range of the F-6 would not let fliers go too far astray from their intended tracks. In any case, during cross country flights, the weather brief and arranging a "Flight Following Service" with the area radar were mandatory. All these peculiarities let the F-6 pilots develop and maintain good relations with the radar controllers. This became handy and useful during dissimilar air combat training as the F-6 pilots got to know their radar controllers well and had confidence in them.

Somewhere in December 1965 PAF also received five Russian Mig-19 aircraft from Indonesia. These aircraft were ex Indonesian Air Force and were in addition to other military hardware received from Indonesia. This was a result of a close friendship between President Sukarno and President Ayub Khan. These aircraft were shipped in crates and assembled at PAF Base Masroor.

### F-6 Rebuild Factory Kamra

F-6 had a rather limited time between overhaul both for engine and airframe. During the first 15 years of its service the aircraft used to be ferried to PAF Base Faisal. There it was disassembled and packed in crates for shipment to China. They were received after overhaul in the same manner and then flown off to respective bases after reassembly. Besides being expensive, this arrangement denied the PAF the availability of the aircraft for up to two years. Work began in 1977, for developing an in-country overhaul facility. Eventually on 8th Nov 1980, F-6 rebuild Factory was inaugurated at Kamra and it rolled out the first overhauled F-6 tail number 7112 on 10th Nov 1981. The second and third were rolled out in February and April 1982. These first three F-6s were overhauled and test flown by the Chinese at the MRF with PAF engineers and technicians learning on the job. The fourth F-6, tail number 1913, was completely overhauled by PAF. It was air tested in September 1982. Being the first ever attempt at overhaul by the PAF, the pilots were a bit sceptical. Kamra at that

time had not been commissioned as a proper air base and only had a bare bone infrastructure. Needless to say that the air test was a success in the first attempt. Besides the performance of the aircraft, the test pilot, Flt Lt Nusratullah Khan, was quite excited on seeing all light covers with captions in English. He enthusiastically admitted, "It is the first time I have come to know what most of these lights are for!" There was no looking back thereafter. In all, the F-6 RF overhauled 223 F-6 aircraft and carried out major repairs on 133 of them.

The F-6 RF not only kept the operational availability of F-6s high, it also came in handy for incorporating various important modifications. PAF reportedly made around 140 modifications on the F-6 to suit its operational and safety requirements. The retrofit of American Sidewinder missiles was the first major modification carried out on the F-6. In the sixties and early seventies the other combat aircraft in PAF inventory had reliable ejection seats. However,



Left Page Center: F-6 stands tall amidst gathering storms in background at PAF Base Samungli. (Photo: Peter Foster)

Left Page Bottom: F6 matures into a capable weapon system- PAF made significant modifications to its F-6 fleet, most notable being AIM-9B Side winder. (Photo: Peter Foster)

Above: True bird of prey among PAF aircraft- A F-6 from No 15 Sqn Cobras sits on the tarmac. (Photo: Peter Foster)

Center: Stars of the Show-parked on the Mianwali tarmac. (Photo: Peter Foster)

Right: Looks aren't everything when you are the protective eyes in the skies (Photo: Peter Foster)





Left Page Above: PAF pilots who had the time of their lives flying the F6- Air Cdre Imtiaz Bhatti, Base Cdr Sargodha poses with pilots during an operational exercise. (Photo: PAF Archive)

Left Page Inset: Ritual-Back at base there is no pause as ground crew prepare the F6 for exercise.

RIGHT: A collage of PAF pilots who were ahead of the F-6 in terms of performance.

Bottom: Its specialized missions will become part of aviation history- A four ship formation of 19 Sqn F-6's is ready for take off for an operational exercise. (Photo: PAF Archive)



design deficiencies and performance limitations in the Chinese ejection seat became a serious concern among the pilots. Taking cognizance of this urgent issue PAF in 1975, eventually installed a customised Martin Baker ejection seat in the F-6s, which was a great source of confidence to the F-6 pilots. The other significant mods included AIM-9B/J/P, MM3 attitude indicator, Western altimeter in feet, UHF Radio, Gun Camera,



ECCM mod, L/G beeper and IFF/SIF etc.  
**F-6 in Combat Operations**  
 The F-6 became a legend in its own lifetime in the Pakistan Air Force. By the time the 71 war loomed, PAF had operationalised three squadrons of the F-6. The pilots of No 11, 23 and 25 squadrons were those who had extensive prior experience on the F-86s. When the war broke out these pilots had also acquired enough training

and experience on the F-6 in air defence and ground support roles. The retrofit of Sidewinder missiles had given them a lot of confidence. They were quite familiar with this weapon and had developed full confidence in their well-armed F-6 aircraft, flying it down to fine art. F-6s flew combat air patrols and were also employed for ground attack. On the whole, they flew over 650 air defence sorties and claimed seven confirmed kills in aerial combat including Mig-21, Hunter and SU-7 aircraft. The F-6s also rendered valuable support to our ground troops. They flew 184 ground attack sorties destroying enemy tanks, vehicles, bunkers and troop concentrations. Their ground attack role in Shakargarh sector was considered to be most successful. As Pakistan's nuclear programme matured in early and mid-eighties, military planners sensed an impending

aerial threat against it. This warranted dedicated air defence facilities at Kahuta. F-6s along with Mirages, fully participated in this campaign of the PAF and shouldered a major share of this responsibility. After the Soviet invasion of Afghanistan as Afghan/Soviet combat aircraft began operations against the Mujahideen, their incursions into Pakistani airspace increased. Operating from Peshawar and Samungli (Quetta) F-6s provided an effective defence of Pakistan's western borders. The four squadrons of F-6s, based two each at

“In December 1965, PAF also received five Russian Mig-19 aircraft from Indonesia. These aircraft were ex-Indonesian Air Force and were in addition to other military hardware received from Indonesia.”

Peshawar and Samungli, contributed 60 % to the air defence effort of the PAF against the Soviet/Afghan incursions. Also, when in 1998 Pakistan was to test its nuclear weapons at Chagai, Baluchistan, PAF Base Samungli was the closest to this site. Hence, F-6s provided the bulk of the effort for the air defence of the test site. The acquisition of F-6 by PAF was the foundation of Sino-Pak relationship that has strengthened over the subsequent years. The F-6 was replaced by

the Chinese F-7PG, an upgraded version of the F-7P that was already in PAF inventory. The prolonged successful presence of F-6 in PAF inventory was a testimony to the friendship that Pakistan and China have had. Since the launching of the F-6 programme PAF has moved on to K-8, F-7P, F-7PG, ZDK-03 AWACS and finally the JF-17. Acquisition and joint development of these aircraft along with several weapons and sensors has strengthened the strategic relationship between the two countries. This legacy has opened the ways for new and more important and beneficial venues for Pakistan and PAF in the field of military aviation. F-6 was a conventional aircraft that required pilots to have



## Major Modifications on F-6 Aircraft

Modification	Date
Carriage of AIM-9B sidewinder missile	20 Apr 1967
Modification of Missile Control Box	13 Feb 1969
Installation of additional underwing fuel tanks	3 Feb 1971
Modification of simultaneous dual engine start	7 Nov 19
Installation of Martin Baker ejection seat	9 Aug 1976
Installation of IFF/SIF	29 Oct 1976
Installation of Aero-3B missile pylon	29 April 1977
Installation of MM-3 attitude indicator	12 Nov 1978
Carriage of French 68mm Rockets	06 Aug 1979
Provision of L/G down and locked Beeper	02 Sep 1980
Carriage of Napalm Bomb	02 Aug 1983
Installation of GPS-100 system.	21 Aug 1995



true knowledge and understanding of its aerodynamic peculiarities and performance envelope. The sooner pilots acquired this acquaintance the earlier they would control and master this wild horse that had a mind of its own. F-6 could be tamed with the raw pilot ability of its fliers. As officers gained experience on the F-6 they began to like it more and more. Unlike the modern day fighter aircraft the F-6 had to be "flown" by its pilots and not "operated" by them. They were daredevils of the PAF, who chose to mount a maverick whose ride was thrilling, yet risky.

No 23 Squadron of PAF has had the unique association with F-6 aircraft. On 8th Feb 1966 this was the first Squadron

to be equipped with F-6s and until 27th March 2002, it was the last squadron to have operated this aircraft - a long faithful bond of 36 years.

F-6 remained the mainstay of the PAF in the 70s and 80s till overtaken by the Mirage and F-7. During this time frame it rendered the extremely valuable service of keeping its fighter pilots skilled and operationally ready for them to subsequently move on to Mirages and F-16s. It kept the army FACs trained for close support operations and accomplished the all-important task of meeting nearly 80% of the air defence requirement of the PAF. It rendered valuable contribution in times of war and operational contingencies. Every

fighter pilot of PAF who was in service in the 70s and 80s got an opportunity to fly the F-6. Despite its peculiarities and handicaps, the F-6 was a joy to fly but rather challenging to master. F-6 had uniquely striking looks. It was an aircraft that looked robust, muscular and virile and had many captivating profiles. F-6 operators will never forget their experience of having flown this unique and enchanting fighter aircraft.

On 27th March 2002, Pakistan Air Force bid farewell to its work horse, the F-6, at PAF Base Samungli near Quetta, Baluchistan. F-6 made outstanding contributions to aviation and peace in the region. As such, it deserved a befitting farewell. The highlight of

this occasion was an impressive fly past of a formation of all types of fighter aircraft of PAF with the F-6 in lead. The display also included a bomb burst by four specially painted green and white F-6s. Air Chief Marshal Mushaf Ali Mir, CAS PAF, hosted the event and Governor Baluchistan was the Chief Guest. The other highlight of the event was the presence of pioneers and old timers of the F-6 programme of the PAF, especially veterans of 71 war. Air Marshal Nur Khan, former C in C of the PAF, was the most notable among them. He was responsible for selecting and inducting the F-6 in the PAF. Chief of Staff of the Chinese PLA Air Force was also among the guests along with senior officials from the Chinese aviation industry.

"We flew a challenging aeroplane, but with their zest and skill, the pilots could take it to its limits and even beyond. Flying the F-6 always enhanced the fascination of fighter flying", said Wg Cdr Kamran Malik, a veteran F-6 pilot.

Left Page 1: PAC Kamra played a key role in upgrading the F-6 fleet for more than three decades.

Left Page 2: A routine maintenance day at a PAF Base.

Left Bottom: A F-6 from 'Tail Choppers' Sqn rolls down the runway with fully extended drag-shute, a picture of finesse.

Right 1: A mirror image-A PAF F-6 stands tall on the tarmac.

Right 2: Final resting place at PAF museum Karachi.

Right 3: A lone warrior flying over rugged mountains of Baluchistan.

All Pictures (PAF Archive)



In the 70s various F-6 squadrons regularly participated in international exercises like Midlink with the USAF under CENTO and Ex Shahbaz. During these the F-6 pilots amply demonstrated their proficiency and skills that they had acquired the over the years. Flying intercept missions and engaging in air combat with F-4s, F-14s F-15s and even F-111s was a unique experience for both the sides. Flying superior aircraft the USAF participants would enter the arena anticipating assumed results. Having routinely contested against the European air forces, the USAF was surprised when their kill ratio against the F-6s was 1/10 of what they had achieved against Europeans.



# Ever-Evolving UK COMBAT AIR

“Alan Warnes brings to you a sneak peak of latest developments, offshore deployments, upgrades, modernization plans of the ever evolving UK Combat Air; a force well cognizant of future challenges.”



**T**here have been significant improvements to the RAF's combat-air capabilities in recent years. Over the past decade both the jump-jet Harrier GR9/9A and Tornado GR4 have retired, at a time when they would have done a very good for any air force looking for a more capable third generation aircraft. Both had been put through comprehensive upgrades so they were unrecognizable from the jets introduced into service at the beginning of their careers. The Harrier was ultimately replaced by the Tornado in 2011, when the military was strapped for cash. Both had been valuable servants in their time, and the premature retirement of the Harrier which was just about to be upgraded with the very capable Brimstone missile hit the Royal Navy and RAF morale significantly. The HMS Ark Royal aircraft carrier was also retired in late-2010 so it was a particularly tough time for the Navy.

When the Tornado was retired in March 2019, the jet had served almost 30 years

There are now two squadrons flying the F-35B serving the UK's Lightning Force. No 207 Sqn is training pilots

and personnel while the world famous 617 'Dambusters' Sqn is the first operational unit. In true joint force fashion, the Dambusters is commanded by a Royal Navy aviator. (Alan Warnes)





of continuous operations. It all started with the Gulf War in 1990, with the 'Tonka', as they were affectionately called, deploying to the Middle East, and continuing their presence in the region until after Gulf War II when Saddam Hussein was eventually toppled. They moved from the middle east theatre of ops to Kandahar in Afghanistan in 2009, where they replaced the Harriers which had been supporting allied ground troops in the CAS (Close Support) role from 2004. In March 2011, while the Tornado was still in Afghanistan, elements of Tornado GR Force deployed to Gioia del Colle in Italy as part of Operation Ellamy, supporting NATO operations against Colonel Gaddafi. They worked alongside RAF Typhoons until their departure in November 2011. It left Tornados to concentrate their efforts in Afghanistan as part of Operation Herrick until November 2014, but by then Islamic State had taken over huge swathes of Iraq and Syria. It led to the jets being deployed to RAF Akrotiri, Cyprus in August 2014, under the UK's Operation Shader, providing a much needed reconnaissance capability for the allies and to attack IS targets in Iraq and later Syria. The Tornados were joined by RAF Typhoons in December

2015, but continued in Cyprus for more than three years before flying their last mission on January 31, 2019 and heading back to RAF Marham, Norfolk on February 4 and retirement in late March. Today the RAF Typhoons are still based at RAF Akrotiri supporting the allies' efforts against ISIS. Joining the Typhoon on the RAF's front-line is the F-35B Lightning Strike Fighter. During June last year they even spent four weeks in Cyprus working up, with some of that time in the air with the Typhoon (see later).

### Typhoon

The RAF prides itself on having the best, and right now the Eurofighter Typhoon is undoubtedly a class multirole act following its three-year £425m Project Centurion upgrade Completed in December 2018, allowing Typhoon to replace the Tornado, it now has an extremely flexible capability, with the classy MBDA Brimstone II precision attack missile, MBDA Storm Shadow stand-off weapon and the best Beyond Visual Range Air to Air Missile (BVRAAM), the MBDA Meteor. They all joining the 500lb Paveway IV laser guided/INS bomb.

“One of the biggest tasks facing the Tempest team is predicting the sort of systems required for a 2040s-era fighter.”

A Typhoon used the Brimstone 2 missile for the first time in anger on February 19 last year when it attacked and destroyed a Daesh boat. Shouldering much of the responsibility for the integration of Project Centurion Typhoons and F-35B Lightnings into service is Air Cdre Dave 'Bradders' Bradshaw. He is the Senior Responsible Owner for the RAF's Combat Air. "I'm charged with keeping the front line fleets up to date with new aircraft, sensors, weapons, avionics and training systems." There are currently six squadrons of Typhoons serving the RAF, of which four are responsible for manning the air defence alerts in the UK and in The Falklands. They can be armed with the AIM-132 ASRAAM (Airborne Short Range Air to Air Missile) and the AIM-120C7 AMRAAM (Advanced Medium Range Air to Air Missile). On the weapons fit, the Air Cdre Bradshaw commented: "The weapons suite is dependent upon the operational commander to look

Above: The UK's Harriers were abruptly retired from service in December 2010 after the government's strategic defence and security review (SDSR). Alan Warnes

Left Page: After the Project Centurion upgrade was completed, both the air to ground and air defence roles became the responsibility of the Typhoon. As well as defending the skies of the UK and the Falkland Isles in the south Atlantic, the jet is still involved in bombing IS in Syria and Iraq from RAF Akrotiri, Cyprus. Alan Warnes







• Above: Project Tempest is seeing the UK government along with industry charting a Typhoon replacement for 2040. Right now it could be unmanned or manned. This mock-up was shown off at Farnborough in 2018. Alan Warnes

at the threat and the demand as to what to actually fly with." As recently as 29<sup>th</sup> April Typhoons from RAF Lossiemouth in Scotland scrambled to intercept two Russian Air Force Tu-142 Bear-F long range MPAs. One of the issues with Russian military aircraft these days is they don't usually communicate ie 'squawk' [broadcast an identity code] with air traffic controls, so the Typhoons as well as monitoring the aircraft also assist civilian ATC. It followed a recent spike in Russian activity close to UK air space. On 12<sup>th</sup> March six Typhoons intercepted

a number of Russian military aircraft operating off the coast of the UK. The previous day, four Typhoons from RAF Lossiemouth intercepted two Russian Tu-142 Bear-F long range MPAs that approached from the north-east and flew in international airspace off the west coast of the UK, down towards the Bay of Biscay, where French assets monitored them and then they returned north. They did not enter UK sovereign airspace. On March 7, six Typhoons intercepted at least two Tu-95 Bears. The QRA at RAF Mount Pleasant, Falkland Islands

manned by 1435 Flight, protects UK interests in the South Atlantic. The Typhoon Force has had other recent commitments too, like Baltic Air Policing when XI Squadron Typhoons deployed to Estonia last summer. Over the four-month deployment, known as Operation Azotize, RAF Typhoons conducted a total of 21 interceptions of 56 Russian aircraft in the skies above Estonia. As recently as 28<sup>th</sup> April No 6 Squadron took four Typhoons to Siauliai, Lithuania for another four-month BAP

detachment. No 1 (F) Squadron from RAF Lossiemouth deployed to Iceland in mid-November last year for a month on the RAF's first ever Icelandic NATO Air Policing mission. A sixth Typhoon squadron, 12 Sqn was re-established at RAF Coningsby on July 24, 2018 to train Qatari Emiri Air Force (QEAFF) personal on the Typhoon. For three weeks in late November/early December last year the squadron participated in Exercise Epic Skies III at Al Udeid, Qatar.

**F-35**

The Lightning Force is a joint Royal Navy and RAF force. Unlike the RAF/Royal Navy Joint Force Harrier it does not suffer from a tense relationship. To emphasis that, 617 Sqn known as the 'Dambusters', arguably the most famous RAF squadron, has a Royal Navy aviator, Commander Mark Sparrow as the commanding officer. The F-35B Lightning reached Initial Operating Capability (IOC) Land status in mid-December 2018. It meant No 617 Squadron could now go to war and the unit lost no time in

deploying to Akrotiri, Cyprus with six of its 14 F-35Bs on May 21. As part of a four week work-up exercise, known appropriately as Lightning Dawn, the stealthy jets flew 95 sorties, leading into nine days of combat missions over Iraq and Syria. Between June 16 and June 25, 2019, the six fighters flew 13 combat missions, making the UK the third country, after Israel and the United States to deploy F-35s in a wartime role. They returned home on July 1. Air Cdre Bradshaw continues: "Our near term focus is to ensure Lightning Force can fight effectively from the Queen Elizabeth carrier and reach Full Operating Capability [FOC] in the 2025 time frame when UK weapons will be integrated." The fifth generation fighter is being prepared for its first



operational cruise – known as Carrier Strike Group 21 or CSG21. As part of that work up, No 617 Sqn 'Dambusters' participated in Exercise Red Flag in early February. The Air Cdre told the author, "It was the first opportunity to engage the Lightning Force in that high-end



• Above: A picture of Grandeur- Royal Navy F-35B Lightning II with BAe Hawk shadowing. (Photo: Royalnavy.mod.uk)

training environment. The whole principle of Red Flag is operating together, integrating forces so they can fight in a composite air operations (COMAO) and make sure we can integrate fourth generation with fifth gen platforms like F-15s, F-16s and Typhoons. It is a training exercise, as high end as we could possibly hope for." A former RAF Harrier GR7/9 pilot, Air Cdre Bradshaw is now concentrating efforts on the next milestone – IOC (Maritime). "That's our near term focus ensuring the Lightning Force can fight effectively from the Queen Elizabeth carrier. Which is the main reason 207 Squadron deployed to the carrier

• Bottom: The first operational deployment of the new HMS Queen Elizabeth aircraft carrier with the F-35Bs on board will be autumn 2021. Both British and USMC F-35Bs will deploy. Crown Copyright





comes into service in 2035 we need to make sure the systems on board and off board meet the requirements of all partners."

Tempest will be the first time a combat platform, whether manned or un-manned to be designed from the inside out. Leonardo UK is leading work on the Tempest integrated sensors, non-kinetic effects and communications systems, drawing on its expertise in areas such as radar, electronic warfare and electro-optics. The company is carrying out research in a number of areas

of complex electronics. "This will sit at the very core of any future platform capability, especially considering the battlespace that Tempest will have to operate within 15 years' from now which will be more complex, congested and contested than ever before." Ian Bancroft Director of Major Air Programmes at Leonardo UK told the author in March, then added: "We are working right now with BAE Systems to ensure that space will be available for our sensors. Elsewhere, Rolls Royce is already working on world-leading electrical generation technology for Tempest,

recognising that the sensors and effectors, particularly those which are laser-based, will need much more electrical power than previous generations of aircraft. And we're working closely with MBDA to look at how its effectors can make use of the sensors we're developing in order to neutralize threats quicker than ever before." In the future battlespace, complex electronics will be the key differentiator on-board an aircraft, and will need to accommodate incredibly high-performance sensors and defensive electronic systems. It's a big challenge!

Bottom: Lightning Force F-35Bs from 617 Sqn deployed to Red Flag for the first time in February 2020. Crown Copyright



around the same time 617 Sqn went to Red Flag."

No 207 Sqn is the Lightning Operational Conversion Unit, responsible for training pilots for the F-35B Lightning at RAF Marham, Norfolk alongside 617 Sqn. The unit stood up on July 1st last year, under the command of Wg Cdr Scott Williams, who as the Officer Commanding of 207 Sqn took the F-35Bs to the carrier for Exercise Lightning Fury. He has the huge responsibility of growing a sufficiently qualified F-35 force in time for CSG21 for autumn next year. Air Cdre Bradshaw added, "As our F-35B training unit 207 Sqn will qualify its staff, instruct the front line pilots and eventually new

**“Eurofighter Typhoon is undoubtedly a class multirole act following its three-year £425m Project Centurion upgrade Completed in December 2018**



Above: After 30 Years of overseas operations that saw the Tornado participate in wars over Iraq (twice), Libya, Afghanistan and against Islamic State in Syria and Iraq, the much upgraded jet was retired from service in March 2019. Alan Warnes

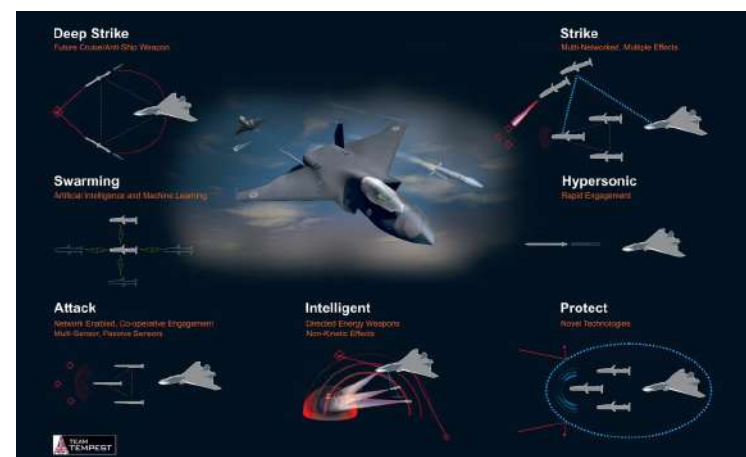
ab-initio pilots as they come through the training system."

**Further into the Future**

When the UK Combat Air Strategy was published in July 2018, the government set out its ambitions to develop a new fighter system that would be operational by 2035. Being a critical national asset, important to the security defence of the

UK and it wouldn't just be a military capability, there was a whole layer of UK industry underpinning it with thousands of jobs. The UK hoped to collaborate with international partners, and in 2019 Italy came on board while Sweden has also got involved. The focus of the Combat Air Strategy is to replace the Eurofighter Typhoon by 2040 and the Team Tempest project group tasked for this sizeable job is made up of BAE Systems, MBDA UK, Leonardo UK and Rolls Royce along with the RAF's Rapid Capabilities Office. One of the biggest tasks facing the Tempest team is predicting the sort of systems required for a 2040s-era fighter. Andrew Kennedy, Strategic Campaigns Director, BAE Systems and his team are trying to tether the best of the evidence available to know what is worth investing in. "What we can say is when it

Bottom Left: Trying to predict the weapons of 2040 is undoubtedly causing a few headaches This was shown at Farnborough at the unveiling of the Tempest mock-up. Alan Warnes



# IAF'S PROCUREMENTS: THREAT to Regional Peace

“In a world of increasing uncertainty, nations scamper to take measures to protect themselves- to secure their position in the world nexus. Some nations prefer securing their regional position through diplomatic ties and soft means. However, on the other dark end of the spectrum are certain nations that adopt a frenzied race of acquiring arms and other destructive weaponry. Unfortunately our neighbour India is one of such nations. It's mindless accumulation of weapons will not only trigger an arms race with Pakistan but would also destabilize the entire region.”



Inset: The Indian Air Force has inducted four India specific Chinook CH- 47F (I) heavy lift, tandem rotor helicopter at Chandigarh's Air Force Station 12 Wing. (Photo: economicstimes.com)

Bottom: The first four Rafale aircraft for IAF including three twin-seater trainer and one single seater fighter aircraft would start arriving in July 2020. (Photo: timesofindia.com)



According to John Mearsheimer's theory of offensive realism, in an anarchic world, states are aggressive power maximizers. Keeping this theory in context, India's acquisition of advanced and sophisticated defence equipment from foreign as well as domestic sources is being undertaken in order to augment its power and influence. This elucidates the fact that India is exhibiting a strong aggressive approach in order to destabilize precarious regional dynamics. Indian Air Force, the most capital-intensive force of Indian military according to an Islamabad Policy Research Institute (IPRI) report, is at the forefront of acquiring advanced weaponry.

These defence acquisitions, particularly those of the IAF need to be seen in the light of the current ultra-right-wing Indian governments' reign. Indian governments' have historically adopted a hegemonic approach with regards to its neighbors; now it aspires to reach the status of a great power. However, Indian Air Force despite its numerical superiority had to take the bait in its encounter with its much smaller counterpart when the two rival forces were at daggers drawn last year. Pakistan's Air Force response was in accordance with International law norms of retribution and reprisal and struck Indian targets-while deliberately avoiding casualties- thereby sending a clear message that it could target any Indian objective at will. Following the twin incursions of Balakot and Uri, Indian military's doctrinal emphasis has shifted towards undertaking limited surgical conventional strikes while remaining below the nuclear threshold.

It was forewarned as early as 2009 by the spokesman for Pakistan's foreign office that 'there are acquisitions of sophisticated weaponry

**S-400 battalion components:**

Command-and-control equipment

5P85TE2/5P85SE2  
Launchers (up to 12) with 4 missiles each

40V6MR  
mobile mast system

91N6E  
Big Bird acquisition and battle management radar

55K6E  
Mobile command post on Ural-532301

Up to eight fire units, including

92N6E  
Grave Stone engagement and fire control radar

Optional equipment:

96L6E  
all-altitude acquisition radar

48H6E / 48H6E2

**Specifications**

- 2x** Twice as effective as previous generation air defense systems
- AUTO** Fully automated battle management cycle - from target acquisition to assessment of engagement results
- ||||** The only air defense system capable of firing five types of missiles
- 4+** Considered a "4+generation" system by performance and combat capabilities

**Performance characteristics**

Targets' Max Speed	up to 4,800 m/s
Range, km	250
Aerodynamic targets	60
Ballistic targets	0,01 - 27
Altitude, km	0,01 - 27
Number of simultaneously engaged targets	36
Deployment time	5
Service life, years	not less than 20
equipment missiles	15

Some types of S-400 missiles

9M96E/9M96E2 ground-to-air missiles

Range	1-40 / 1-120 km
Altitude	up to 20 / up to 30 km

**Russian S-400 Triumf Air Defense System**

S-400 Triumf air defense system is designed to intercept all types of aerial targets, including ballistic and cruise missiles

**S-400**

Developer: Russian Air Force Design Bureau

SA-21 Gonsol

2007 APRIL 28 S-400 Triumf put into service

ALY S-400 intercepts low altitude targets flying at the speed of about 2,800 km/h (1,740 mph) and the altitude of 18 km (56,000 ft)

ALYX The first S-400 air defense system put on combat duty near Moscow



Left: India and US have signed the contract for six Apache helicopters for the Indian Army which follows a contract for 22 helicopters ordered by the Indian Air Force in 2015. All 22 Apaches have been delivered to IAF in March 2020. (Photo; timesofindia.com)

by our neighbor which will disturb the conventional balance between our two countries and hence, lower the nuclear threshold'. Ever since the Modi government has taken over, the acquisition of these weaponry has picked up pace especially after the escalation of 2019. In a bid to further acquire the latest technology available in the international market, IAF's chief stated at the beginning of March that acquisition of 36 Rafale jets will be insufficient for the country's defence. The acquisition of 'sophisticated weaponry' by India tends to fall under the larger concept of force employment. Concept of force employment in developing a war winning strategy is critical in context of future South Asian warfare.

Technological superiority is an important aspect of a war winning strategy. In order to employ the latest technology in case of future wars or contingencies, India has plans in the pipeline to acquire the latest tools from leading military development

complexes in order to augment its goal of becoming a global player and compelling its smaller neighbor to the west. A major consequence of these acquisitions is of putting the fragile South Asian deterrence calculus and conventional match vis-à-vis Pakistan in jeopardy.

According to Walter Ladwig, a senior lecturer at King's college, London, the conventional forces of Pakistan are the cornerstone of the strategic deterrent capability. To maintain some semblance of parity, Pakistani military strategists and policymakers have to keep a close eye on conventional military developments across the Indian border. These conventional developments can range from recent Indian fitting of RDY-3 radar on its Mirage-2000 to acquisition of Rafale fighter jets in a deal worth over \$7.8 billion.

India has been designated as a major US defence partner. In this regard, they have also signed the

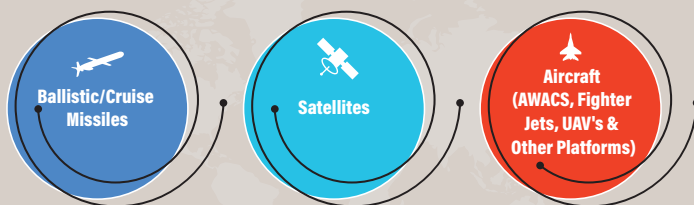
Communications, Compatibility and Security Agreement (COMCASA); which calls for interoperability between different military platforms and sale of high-end technologies. IAF has also signed other deals notably the \$3 billion with US for acquisition of 15 Chinook heavy lift helicopters and 22 Apache attack helicopters. The delivery of these helicopters has already started. The

“These defence acquisitions particularly those of the IAF need to be seen in the light of the hegemonic designs of the current Indian government led by extremist BJP.”

Hindu majority country has further bolstered its strategic relationship with the United States by signing deals worth over \$10 billion for P-8I, C-130J 'Super-Hercules' and C-17 Globemaster aircraft. These acquisitions will aid in fortifying the combat support role of Indian Air Force.

The acquisition of modern military equipment by IAF-in particular the plans for acquiring S-400 and Rafale, in deals worth over \$14 billion-point towards its growing aggressive attitude. Besides these two major contracts, IAF has a multitude of other acquisitions planned and executed. (detailed in figure 1).

**S-400**  
Indian Air Force has bought five



squadrons of S-400 i.e. 40 launchers, and about 1,000 missiles. 70% of purchased missiles are of very long range (400 km) and long range (350 km) category and the rest have lower ranges of 300km and 250km. The S-400 surveillance radar with a range of 600 km and a 360° coverage can track 70 to 80 targets. It has anti-stealth capabilities and can engage multiple targets at once while being highly mobile- due to its launch vehicles-can be positioned anywhere. To summarize the capabilities of S-400: it has a multifunctional radar system and an autonomous detection and targeting system, with four types of missiles, launchers and a command and control platform.

It plans to use S-400 in an offensive air defence role. This is why it has purchased most of the batteries with a higher than 400 KM range. India has plans for using S-400 at a strategic, operational and tactical level respectively.

**How India plans to use S-400 at Strategic level?**

At the strategic level, with its various range of missiles, it plans to counter Pakistan's ballistic missile capability. Its' very long range missile has a speed around Mach 10. This missile type can be used to destroy satellites as well as incoming ballistic missiles. It utilizes the Active Electronically Scanned Array (AESA) radar. Acquisition of S-400 will primarily have negative consequences at a strategic level.

The very long range missile will lead to Pakistan's strategic deterrence capabilities being put in a compromised situation. Pakistan must therefore look at innovative ways such as upgrading the Ababeel platform and/or working on a stealth fighter jet under the recently initiated Project-Azm to overcome the undesirable situation that India's acquisition of S-400 will lead Pakistan into.

**How India plans to use S-400 at Tactical Level?**

At the tactical level, India will use the shorter and medium range S-400 missile capability to target Pakistani air borne assets. It will use the medium range capability to target more expensive platforms such as AWACS (Airborne Early Warning Aircraft) & EW (Electronic Warfare) planes. AWACS and EW are a force multiplier and if India uses S-400 to target them, Pakistan will need to switch to an integrated network of ground-based radars and jamming systems as a backup.

**Is India going to stop at S-400?** India does not look to terminate IAF's air defence acquisitions at S-400 and is seeking ways to continue further procurement. This includes its ambition to buy the National Advanced Surface to Air Missile System (NASAM) from the United States and air defence technologies such as SPYDER from the Israelis. Similarly, India also intends to buy the more advanced S-500 system. S-500 is going to integrate the capability to destroy intercontinental ballistic missiles, AWACS system, and hypersonic cruise missiles. It also has the capability to jam aircraft.

**IAF Rafale**

According to Indian news reports, Rafale was chosen as the lowest bidder on the life cycle cost out of all the Medium Multi Role Combat Aircraft options that were presented after open tenders. However,

**Rafale:** is a twin-engine multi-role fighter. It can be used for different roles including but not limited to

- Reconnaissance
- Close Air Support
- Anti-access/Area Denial
- Dynamic Targeting
- Anti-Ship
- Precision Strike w/HAMMER
- Nuclear Deterrence
- Refueling
- Intelligence, Surveillance, tactical acquisition & reconnaissance (ISTAR)
- Strike, Coordination & Reconnaissance (SCAR)
- Air superiority and precision strikes w/ Hammers & LGB's



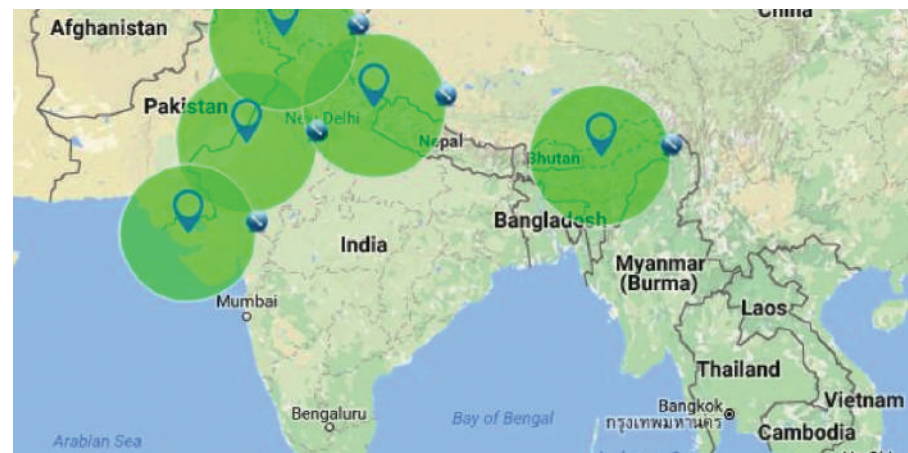
according to aviation experts, it's per hour flight cost is much higher than Russian made SU-30MKI. Nevertheless, it has the advantage of having a shorter time in order to refuel and get back in air. With the cost of each aircraft coming to around \$120 million, India has acquired 28 single seater and 8 dual seater aircraft. Besides that, it has acquired India-specific enhancements such as: Meteor (Long Range BVR missile), SCALP (Air to Ground Missile) and SPECTRA pod (to prevent BVR from locking onto the aircraft).

**Deployment of Rafale:** Rafale jets will be positioned by India in Ambala near Kashmir and in West Bengal. These jets will be used in a multi-purpose role including in air-to-air and air-to-ground role.

**How PAF can counter Meteor:**

According to an Indian newspaper, the IAF remains obsessed with acquiring the European Meteor and outranging the American AMRAAM. However, this thinking itself is an accolade to F-16's potency as the IAF does not want to engage the Lockheed Martin's best-selling asset in a dogfight and instead wants to rely on a BVR platform while up against it.

According to AVM Faiz Amir (ret'd) while answering a query at CASS's G-STAR seminar, he stated that Meteor



has a confirmed hit capability of 60 KM. On the other hand, its claimed range is 150 KM. Conversely, he stated that PAF has the AIM 120-C AMRAAM, which also has a similar hit range capability. Nevertheless, two surefire options of outranging the Meteor include:

- Equipping the JF-17 with the PL-15 missile, which has a range of reportedly more than double of Meteor. However, the PL-15 is still under testing phase. Experts maintain that the fundamental role of the PL-15 is to demolish 'high-value' targets such as airborne early-warning aircraft (AWACS) and aerial refueling aircraft. If acquired, it can be used to outrange the Meteor in an air to air battle
- On the other hand, equipping F-16 with the AIM-120 (C-8) with a range of 160 KM-is also an option that can be looked into.

Similarly, according to defence analyst Ejaz Haider "India has long sought to punish Pakistan just short of Islamabad's nuclear red lines, but has been unable to figure out how." Therefore, acquisition of Rafale and S-400 by IAF will give a challenge to Pakistan's strategic deterrence, while at the same time testing PAF's conventional capability. Pakistan has to take expedient counter measures. These counter measures can be in domains besides military. These can include lobbying efforts to put sanctions on India in the form of CAATSA (Countering American Adversaries through Sanctions Act) for its purchase of S-400. India, still has not received a waiver and American policymakers might act to sanction India and Indian specific entities & individuals for this purchase. Analyzing the purchase of Rafale from a holistic perspective, it can be said that India is diversifying its air fleet and at the same time engaging in economic diplomacy. However, IAF veteran Vijaiinder Thakur believes that IAF allowed itself to be outgunned in previous conflicts due to focusing on platform acquisitions rather than weapon systems and sensors upgrade. This is why, he believes that the advantage gained through Rafale jets will be transient as well.

**Analysis**

S-400 and Rafale are surely very advanced weapons systems that India plans to acquire. Analyzing their effects on South Asian strategic stability is imperative for strategists and policymakers. The acquisition of S-400 and Rafale might lead to a disarray in the prospects for regional peace negotiations and stability. According to Brigadier (ret'd) Ahmad Saeed, "Indian ability to checkmate Pakistan's ballistic missile-based deterrence would encourage the Indian side to launch pre-emptive or surgical strikes".

**Conclusion**

Pakistan must exercise restraint and not involve itself in an unnecessary arms race. Arms race in the region will reduce state's security and make an unnecessary war likely. An escalating

arms race does not guarantee security and stability. Despite assertions to the contrary of Indian government officials, it is stated by many neutral defence analysts that the procurement of S-400 and Rafale is geared towards achieving regional hegemony rather than bolstering defensive capabilities.

The fact of the matter remains that IAF is obsessed with kinetics whereas the world has moved on to electronics. This pervasive thinking in IAF has prevented it from taking up many reasonable offers that came to its doorstep such as the F-21. Nonetheless, the optimal security of the state is paramount in an anarchic world system. In order for the state to maintain autonomy in its dealings (both foreign as well as domestic), it is necessary that PAF keeps pace with IAF's technological developments which primarily include the acquisition of S-400 and Rafale.

PAF can take various counter measures that can include an Integrated Air Defence System (IADS) to provide intelligence and target India's airplane movement. Besides that, working on latest stealth aircraft which is undetectable by Indian S-400 system can also blunt the edge that India gains through acquisition of this platform. According to reports, the latest JF-17 also



has a radar cross-section that hinges on a 'pseudo-stealthy' airframe. Moreover, it incorporates many latest off-the shelf technologies which are part of Chinese high-end J-20. The question remains will a variant of this domestically produced aircraft one day acquire technologies to outmaneuver the S-400? It can be said that air warfare is tilting towards modernization in South Asia. The region's air space is a highly contested one with the Indian Air force being the 4th largest in the world having a total personnel strength of around 139,576. On the other hand, Pakistan Air Force is the 7th largest in the world.

In 2012, IAF revised its doctrine in order to work towards inter-operability with other forces. Controlled punitive strikes and surgical strikes have become the buzzwords for IAF operations against Pakistan during this decade. IAF's transformation from a

tactical to a strategic force is something which has since been operationalized. An example was its use during the Kargil operations. More recently, the Balakot strikes indicate towards a glaring vision by Indian policymakers to use IAF as a strategic force. Use of IAF in order to conduct 'non-military' pre-emptive strikes point towards a climb in escalatory ladder between the Air Forces of the two nuclear armed neighbors. It remains to be seen in the future, as to what is the precedent which has been set by these provocative strikes. According to Professor of International Politics, Robert Jervis, in an anarchic global order, the intentions of the adversary can never be accurately judged. Therefore, threat perception demands that counter-measures are in place to check the adversary's moves. In this regard, Pakistan must not overlook India's desire to become an aggressive power maximizer in the region. Pakistan and its Air force must be wary of the systems that India can employ to challenge its' air sovereignty. It must keep a close watch on IAF's defence acquisitions and respond in a calculated manner to prevent the conventional and strategic stability from tilting irreversibly in favour of India.

• Above: The C-130J-30 Super Hercules is a versatile military transport aircraft manufactured by Lockheed Martin of the United States. On December 20, 2013, India signed a Rs. 4,000-crore deal with the United States for six C-130J Super Hercules special operations aircraft for the Indian Air Force (IAF). All aircraft are presently with service in IAF. (Photo: sps-aviation.com)

• Bottom: The Indian Air Force has a fleet of 11 C-17 Globemaster IIIs. Boeing has also established an in-country C-17 simulator training center which has completed thousands of training hours for aircrews and loadmasters. (Photo: Boeing.com)



Other Acquisitions by the IAF	
Platform	Comments
Apache AH-64 D	According to Economic Times: "The Apache AH 64D Longbow helicopters are one of the most advanced multi-role combat helicopters, featuring all-weather and night-fighting features, ability to track up to 128 targets in less than a minute and engage with 16, besides having stealth characteristics, advanced sensors and beyond visual range missiles" 22 have been acquired by Indian Air Force.
Chinook Heavy Lift Helicopter	According to India Today: "It will provide support to Indian armed forces' in times of disaster relief, search and rescue, aircraft recovery and medical evacuation" 15 have been acquired by Indian Air Force.
C-130 J "Super Hercules"	Tactical Airlift Plane. 6 in service with the IAF
C-17 Globemaster	A strategic transport aircraft, able to airlift cargos close to a battle area. 11 in operation with the Indian Air Force
HAL Tejas Mk2	Acquisition of 83 HAL Tejas Mk2 in a deal worth \$5.5 bn. Hindustan Aeronautics Limited (HAL) plans to increase the production from 8 to 16 aircrafts per annum. If required, it also plans to increase production through outsourcing. The maiden flight of the Mk2 variant occurred in March of this year

# UNWRAPPING THE MYSTERY!

“A daily life example of a healthcare worker in 2024 is an apt insight into our future after 5G takes over and revolutionizes technology as we know it. The world will make quantum leaps as data makes way at 5G”



A day in the life of Doctor Rizwan in year 2025 (San Francisco): Doctor Rizwan is getting late for work and has to read the case history of his patient on whom he has to perform surgery in his native Pakistan. He sits in the car and informs the Automated Driving Assistant about the destination, the car starts itself and starts driving through the traffic towards the hospital. On the way, the car checks on the traffic situation and avoids the traffic to get the doctor to the hospital in time. Meanwhile, the doctor has downloaded all reports and high resolution imagery of his patient on his 5G handheld device and reviewed the situation of the patient in detail.



At the hospital he gets to work. However, he doesn't scrub but walks into an IT (Information Technology) room with machines humming and strange contraptions everywhere. He video calls his patient in Pakistan, reassures him and then talks to the local medical staff who are preparing the patient.

He then quietly slips on his head gear which has a low latency Augmented Reality (AR) connection to Pakistan. Through the head gear he sees the anesthetized patient ready for surgery and the nursing staff waiting for his instructions. He slips on his surgical glove, with all its attached connections and has the control of surgical tools in Pakistan. The connections are low latency so there is maximum 1ms lag

Top: Opening the world up to unthinkable possibilities like self-driving mass transport, 5G will revolutionize life as we know it.

Bottom: With the motive to interlink machines and not just enhance human interaction, 5G will pace up tech processes by huge degrees.

between reality and his perception of it. He performs the surgery and gives the necessary instructions to the local hospital staff.

After the surgery he has 8k video conference on this office screen with colleagues and patients around the world giving diagnosis and opinions. Since its getting to be end of the day he starts walking back to the car and gives it directions to drive home. He feels like having a hot shower at the end of a very tiring day. He quickly switches on the percolator, the air conditioning and the rice cooker at home through his phone. Then he remembers he has no curry to go with the rice and he quickly orders it remotely.

After getting home and taking a hot shower he feels better. Shortly, he gets a beep on his phone and remembers that the curry delivery is outside. He opens the door and accepts the delivery from the drone

which is hovering outside, chuckles to think he didn't have to tip the drone and has a taste of the curry... yummmmm.

After dinner he plans on checking on his Pakistani patient. He goes to the living room

wears his AR headset and connects to the patient's communication screen, inspects him thoroughly. Satisfied with the progress he feels like watching a movie. He goes to the movie list selects the movie in 8k and puts it on download. The movie is downloaded

“With a capability to connect machines with machines 5G would be revolutionary in terms of impact since the 1G networks of the 1980's.”



in less than 1 minute, before he could reply to a personal email.....yes emails in 2025..... still!

Sitting back and reflecting he is amazed at the advances in technology which have increased his productivity from only 5 years before. The concepts of remote surgery, self driving and drone delivery didn't exist then.

The framework for all the applications which Dr Rizwan used in his day was provided by the recently deployed 5G network. As the name suggests, this is the 5th iteration of cellular standards and the most different. The first popular cellular standards which came out during the 80s were AMPS and NMT. They provided basic cellular mobile voice communications and were revolutionary as they introduced mobility for the first time. The 2G networks came out in the 90s and included CDMA and GSM with digital radio and some data capability. Some of these networks even exist in today's world and are faithfully serving us.

The acronym 3G was branded and we saw the dawn of the 3rd generation of cellular networks. With a focus on

data along with voice they made data use cases easier, user friendly and faster than ever before. However by now subscribers appetite for data had been whetted and they wanted data to be faster and ubiquitous. This ushered in the dawn of 4G networks which emphasized data and made voice just one of the applications of a mobile device.

Fast forward to 2010: With the ever increasing demand for data ubiquity, speed and new requirements like the Internet of things (IoT), low latency, remote and enhanced experiences (Augmented and Virtual reality) a new 5th generation cellular data standard was being envisioned. With a capability and emphasis to connect machines with machines rather than only humans to humans 5G would be the most revolutionary in terms of impact since the 1G networks of the 1980s.

So, what is a 'standard' and how do we come up with one? Historically speaking, history in this case being



**“5G, when fully deployed, will spawn new uses, and therefore new businesses, not yet existing.”**

fairly recent, since the 1G standards and till today a need has existed to keep the capability set, interfaces and uses cases in a framework. This framework is generally called a standard which defines the end customer use cases, the interfaces and capability of networks.

Again, historically there have been multiple standard writing bodies, however today they have collapsed into one dominant and generally recognized body called the 3GPP.

The third generation partnership program (3GPP) is a body of mobile operators, vendors, regulators and

• Top: 5G will not only enhance user experience, but also improve infrastructures as a collective.

• Bottom: The tech revolution has projected medical science lightyears ahead: 5G, as elaborated, will take medicine even further.

• Right Page: Drones have transcended from a pop culture gadget to a serious utility tool and with 5G, they will have previously unattained connectivity.



now all kinds of electronic devices and apparatus makers besides other stakeholders in use cases which defines and evolves a generation standard over the length of its life.

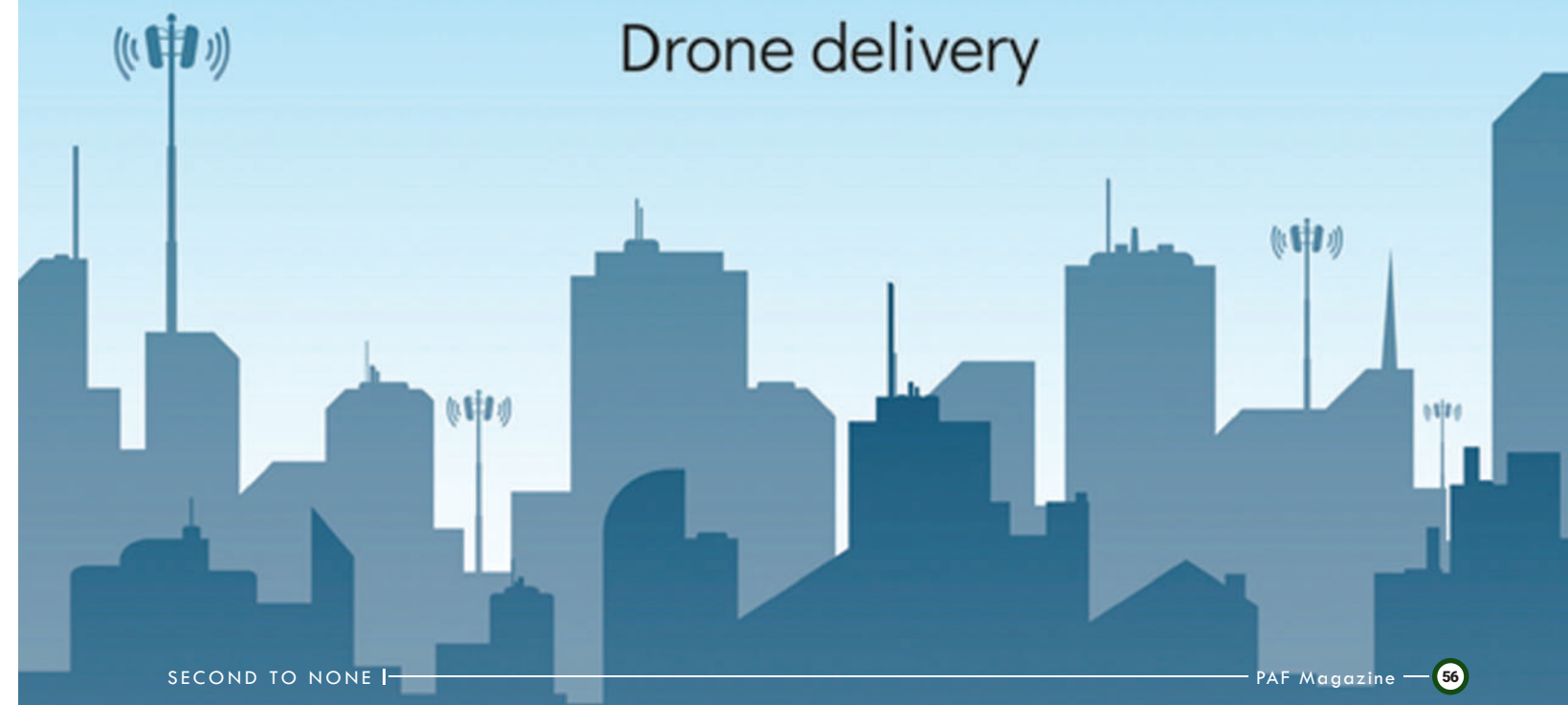
Each standard has a gestation and deployment period of around ten years during which time its conceived, agreed upon and widely deployed. 2020 is seeing the wide acceptance and deployment of the 5G standard. As mentioned earlier 5G is different from all the pre-existing cellular mobile

standards as its designed from its very inception to include machine to machine (m2m) communications. In light of the recent global events about Corona virus and the false claims linking it to 5G, it needs to be mentioned that creating a virus through cellular infrastructure is utter rubbish and impossible. The Federal Communications Commission (FCC) in the US and similar bodies all over the world have carried out extensive tests and have found no unacceptable 5G health risk so far.

5G when fully deployed will spawn new uses cases, and therefore new businesses, not yet existing. It will influence transportation, medicine, education, entertainment, commerce, agriculture and sports.....almost everything in our daily lives will be impacted and enriched by 5G. Hail to the new G king.....may you have an enriching and prosperous reign!



Drone delivery



# POST COVID - 19

# Global Order

“The World-Order had called for its centurial shift and the Pandemic presented it: With the Sino-US trade war and blame game over Covid-19, it is yet to be seen who claims the Leader Of The Free World throne in the Thucydides' power struggle.”



The global order is in a state of flux due to the spread of the novel coronavirus that has infected millions around the world with the death toll rising with each passing day. The pandemic is acting as a catalyst by bringing to fore the geopolitical trends that had previously remained insignificant or gone unnoticed. In particular, it is accelerating rivalry between the US and China that could shift the balance of power from the West to the East with consequences for regional blocs that may eventually transform the post-Cold War era globalization.

### Deteriorating Sino-US Ties

Relations between the US and China have deteriorated at a rapid pace in recent times, leaving the two states with fewer mutual interests and an increasing number of conflicts. Prolonged trade war, rising tech rivalry and geopolitical tensions are some of the factors that could shape Sino-US

ties in the post-pandemic world. While the US-China trade ties have provided ballast to their relationship for many years; the corporate opinion in the US is turning hostile against China due to the allegations of intellectual property thefts. This, in turn, helped foment decisions by Washington to slap tariffs on a range of Chinese goods, triggering a 20-month trade war that was put on hold very recently in January with a fragile truce deal. As per one of the estimates, Chinese investment in the US fell to \$5 bn in 2019, which is down from a peak of \$45 bn in 2016 – a period during which Chinese companies had more liberty to acquire US companies. Trump Administration is also contemplating additional moves against China, which could include curbs on investment flows,

stringent export controls, and limits on integrated supply chains between the two countries. These measures may not only lead to dis-investment from China but could relocate US manufacturing out of China thus adversely affecting the global supply chain in the long term.

“Being the first to emerge from the crisis, Beijing may be the first to recover economically. Hence, a rebalancing of global economic power from the West to the East is inevitable in the post-pandemic world.”

There is also an ongoing tension as Beijing is expanding its influence economically as well as militarily into regions from which Washington is perceived to be receding. Sabre-rattling in the South China Sea is set to increase and China could viably insert itself economically and militarily into Latin America, Middle East and Africa, building on the foundations it has laid with One Belt One Road (OBOR).

### The Shift in Balance of Power

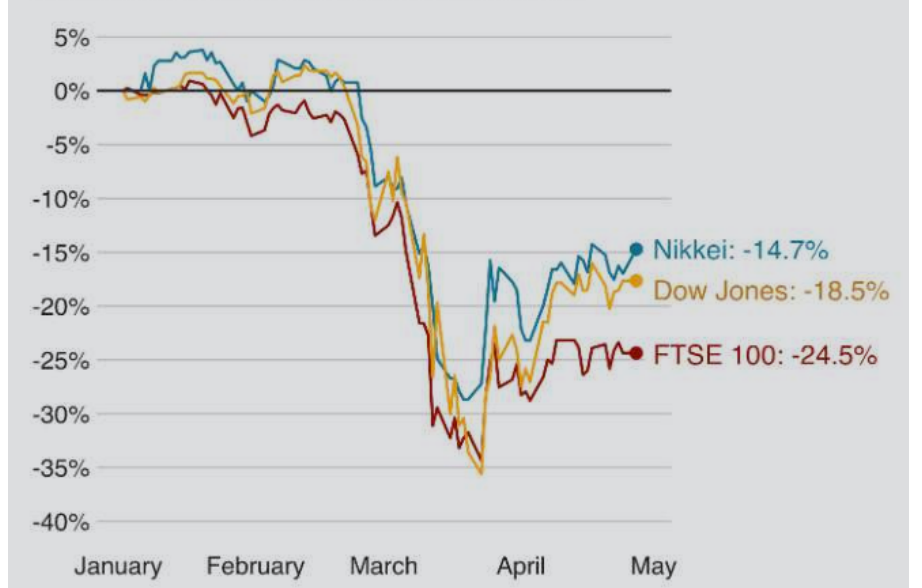
The pandemic could accelerate the shift in the global balance of power from the West to the East. Even though China has been blamed by the western powers – the US, UK and Australia, for its slow and non-transparent initial response to the pandemic, the Asian giant is effectively using the crisis as an opportunity to raise its profile and expand influence. More recently, Beijing embarked upon ‘mask diplomacy’ by donating masks and medical supplies to hospitals and charities around the world in its bid to further China’s soft image. It is also seeking to capitalize on the conspicuous absence of the US from the global stage and provided additional \$ 30 million to the World Health Organization (WHO) at a time when the Trump Administration announced reducing the US funding.

The “America First” policy of President Trump has already led to a diminution of US power globally.

This is underscored by the fact that there is an increasing feeling among many countries that the US is no longer a trustworthy or reliable partner. While Beijing is seizing the opportunity to fill the vacuum left by

the US but the power and leadership of Washington cannot be underestimated as it remains cognizant of China’s intentions, and therefore, most certainly will push back.

The impact of coronavirus on stock markets since the start of the outbreak







Lack of solidarity and divisiveness within EU manifested itself more starkly when Italy's plea for assistance was initially ignored by other European states, allowing China to step in to offer help and hence bolster its global influence. The EU did offer assistance to Italy and other struggling member states after Beijing stepped in, but it was too little, too late, and the damage had already been inflicted. The resentment from this episode is likely to linger on for some time.

As the pandemic spread more widely across the Continent, festering divisions between a wealthier North and a poorer South came to the fore, threatening the fragile balance between divergent nations with closely linked economies. Most nations of Europe's North are expected to recover faster than their southern counterparts, exacerbating a divergence of fortunes in the eurozone and fuelling political tensions over how to pay for the fallout of the pandemic. Coming immediately after the sovereign debt crisis, the migrant crisis, and the Brexit; the COVID-19 crisis could cause an enduring dent in the EU project and consequently strengthen far-right populist movements within the bloc.

**The Retreat of Globalization**  
The West has been pursuing a liberal, free and truly globalized world order after the demise of the Soviet Union and end of the Cold War. While the global inter-connectedness of goods, capital, services, people, data and ideas has produced irrefutable benefits for the economies world over, the novel coronavirus has bared the underlying perils of overbearing dependence on each other. Nevertheless, the pandemic will not mark the end of the era of globalization but could lead to its transformation in markedly three ways.

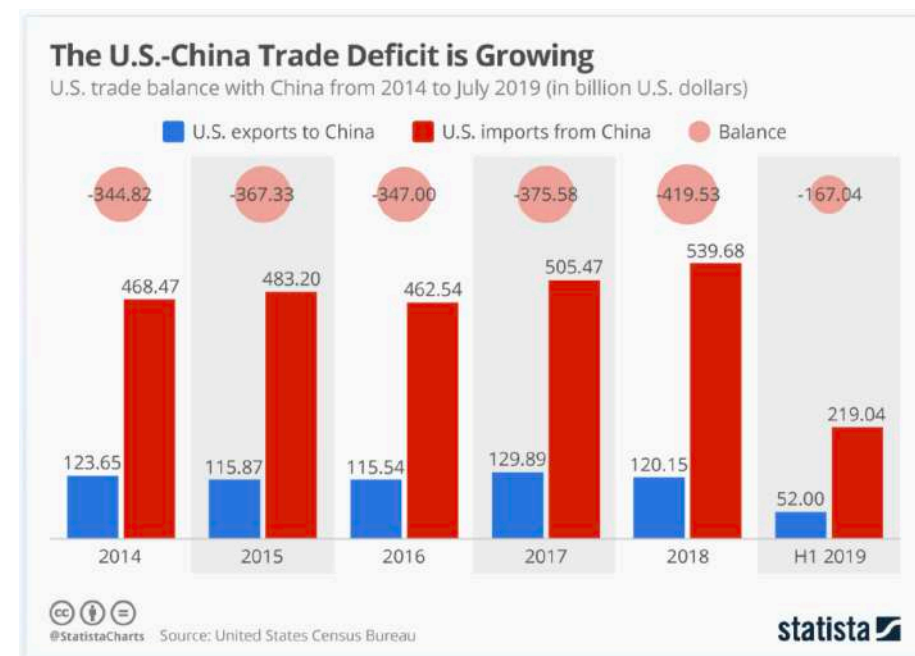
The economic fallout from the Covid-19 would entail years of slow growth for the US and the European economies. This is because of greater dependence on easy money and debt as a consequence of fiscal and monetary policies adopted by these countries to deal with the pandemic crisis. On the flip side, simply by being the first to emerge from the crisis, Beijing may also be the first to recover economically. Therefore, a rebalancing of global economic power from the West to the East is inevitable in the post-pandemic world, unless the West shifts gears and pursues a radically different economic path after the crisis.

### The Weakening of the EU

The failure of the EU to mobilize a uniform response to fight the crisis unleashed by the pandemic and the policy of member states to look after

the citizens of only their own countries has dealt a massive blow to the EU unity. EU states moved unilaterally taking measures they deemed necessary including, shutting borders, suspending free movement and stopping transport links sans any coordination. In a more disappointing turn of events, Germany and France banned the export of protective gear to anyone including the other EU countries. Italy shut its borders without even notifying the European Commission, as did the Netherlands when it stopped all passenger planes from Italy, which was followed by Spain and Austria.

“Relations between the US and China have deteriorated at a rapid pace in recent times, leaving the two states with fewer mutual interests and an increasing number of conflicts.”



## COVID-19

### ECONOMY IMPACT

First, economies may become less dependent on single points of failure and as a corollary, less dependent on China. Governments and big companies may take measures to diversify the supply of key inputs and shift to regional or domestic production. Protracted trade war with China and advances in automation, robotics and other labour-saving manufacturing technologies may accelerate this development. Second, economic integration would still take place but may shift from the global to the regional and bilateral level. Experts argue that global multilateral trade talks have not proceeded since Uruguay Round in 1993; instead, states and

regional blocs have moved to forge trade agreements and partnerships at their behest. For example, the EU signed separate trade agreements with Japan and South Korea, and likewise, China's Belt and Road Initiative (BRI) is also not creating global connections, but regional and bilateral ones.

paradox. Therefore, while Covid-19 would mark the end of the post-Cold War era globalization, it would not replace it with isolationism or protectionism. Post-pandemic era would usher a new phase of globalization – the precise nature and contours of this are still evolving.

“While Beijing is seizing the opportunity to fill the vacuum left by the US, the power and leadership of Washington cannot be underestimated as it will push back.”

The question of how to protect workers without foregoing or undermining the economic benefits offered by globalization, inter alia, a higher standard of living remains a



“There's something powerful about setting a goal so big that there seems no way of achieving it. But that is what one former school teacher did. She watched a group of people join her, rally towards the impossible with children being the core of this change. “It will be exciting to see what their futures look like as a result of what they have learnt at PES,” said founder of PAFWA Educational System, Begum Tazeen Mujahid.”



**T**azeen Mujahid had a dream. A vision that would transform learning for students for times to come. A dream to groom the youth of Pakistan in line with the true essence of Islamic teachings and inculcate in them the real meaning of patriotism for the country. A dream to cultivate an education system where the children are not treated as ‘customers’ but given the utmost priority to become useful citizens of the society. A school where, every morning, the children go running to chase their goals and ambitions. A system where teachers are considered the core and given the due respect which they have lost over the years. The dream got its roots almost three decades ago at PAF Base Sargodha. That was, when Mrs Flt Lt Mujahid Anwar Khan took up teaching as a passion in one of the private schools in the vicinity. That was the same time when her two young children also started school. What she experienced in these private school systems were far away from her vision. Majority of these schools were business ventures with the prime objective of generating revenue.



“ **PES Mission**  
To provide quality and conceptual education to children, enabling them to develop a confident, well rounded personality with progressive and futuristic approach.”





The grooming of children was way down in the priority list of these entrepreneurs.

"Unfortunately, somewhere in our private schools education environment, we do not give our children the opportunity to be who they can be and the freedom to express themselves. Tomorrow's students are going to need skills that we cannot even imagine now", Tazeen Mujahid remarked during an interview.

All these impediments used to greatly upset Tazeen Mujahid. However, every passing day only strengthened her resolve to pursue her dream - if given an opportunity, later in life. Decades later, the vision materialised.

### Humble Beginnings

With Air Chief Marshal Mujahid

Anwar Khan taking over the command of Pakistan Air Force in March 2018, Tazeen's dream started to see the light of day. Her 15 years of teaching experience were about to be put to the real test. Without

**“The main objective of PES is to groom our future generation through conceptual learning, enabling them to develop confident and well-rounded personality with progressive and futuristic approach.”**

wasting much time, she devised a plan to get the things going in the right direction. It was a journey into the unknown, a task which seemed to be 'Mission Impossible'. However, she kept faith in Allah Almighty. She knew that the time has come to pay back to the nation, to do something for the community. With this, started a marathon of sleepless nights, full of angst and anxiety. "Why I was worried most of the times, initially, was because I wanted to develop an educational system for the PAF, which lasts permanently. Sometimes, I thought it was

Above: A panoramic view of PES Islamabad campus- A cradle of learning for the future generations of Pakistan. Inset-PES campus building at PAC Kamra. (Photo: PAF archives)

Right: Air Chief Marshal Mujahid Anwar Khan, Chief of the Air Staff along with President PAFWA, Begum Tazeen Mujahid during a visit at PES Islamabad campus. (Photo: PAF archives)

Left Page: A bird eye view of various activities which were on display at PES 1st Annual day-2019





Right: President PAFWA, Begum Tazeen Mujahid inaugurating PES PAC, Kamra campus. (Photo: PAF archives)



Left: A bird eye view of various activities which were on display at PES 1st Annual day-2019 (Photo: PAF archives)

impossible to complete this mammoth task in such a short time. However my team always supported and gave me hope, when it was required the most." Curriculum for the school, hiring of faculty, availability of funds, building / infrastructure designs, formulation of SOPs and other areas needed early attention as she started from scratch. And finally, all the hard work paid off, the miracle happened. The school infrastructure at Islamabad campus was completed in record time and the classes at PES (PAFWA Educational System), kicked off on 22 March 2019.

### The School

In the first phase, the PES Primary Schools were established at 15 air force locations, under the personal supervision of President PAFWA. PES strictly adheres to its mission to provide quality education to PAF children at doorstep, in an affordable fee structure, without compromising on the standard of education. With air-conditioned environment, standard uniform classrooms set-up, along with supporting activity rooms, provide hands on learning experience; an opportunity for interactive activities for



educational pursuits of students. Audio-visual aids further assist the learning experience. With special emphasis on reaching every student individually, the classroom strength is strictly limited where not more than 20 students are accepted every year.

**“The school curriculum is all encompassing and covers all aspects of a wholesome personality. A lot of emphasis is laid on understanding religious teachings and Islamic principles of a true character of a good human being.”**

It was no small task to ask folks

to give a little more to pull off this vision, to establish a knowledge and concept based learning experience for the children of air force officers and civilians alike. The idea was to give due importance with significance to discipline, religious teachings and character building of our youth. That's why, PES's creators believed in laying

the foundation for realistic and modern personalities, embedded in our cultural and social values serving the challenges of a fast changing technological world. Parents were willing to put their faith in PES, to make the impossible, possible.

“They see what is happening with their children and the manners and skill sets their kids are beginning to come home with. They watch their little ones flourish in an environment where there are no boundaries, for them even the sky is not the limit,” said Begum Tazeen Mujahid.

‘Training the Trainers’ remained the top priority of Tazeen Mujahid. That's why trained, professionally competent staff has to regularly attend training workshops to differentiate their teaching methods. Staff share their experience with their colleagues in order to enrich their academic skills.

Rich reading culture, availability of unique mobile library, with multimedia facilities and variety of books, art, music and sports facilities add richly to the learning experience. The school curriculum is all encompassing and covers all aspects of a wholesome personality. Lots of emphasis are laid on understanding religious teaching



and Islamic principles of a true character of a good human being. Well-planned curriculum to enrich learning experience of children, contributes to their innate abilities. The weekly club activities help children explore their painting, drawing, sketching, role-play, music, sports and computer interests and skills, paving the way forward towards their career pursuits. Students learn to take ownership of events that make them feel like experts. In the end, kids walk out knowing there are a lot more possibilities than they knew about before.

“What makes our schools different is their core philosophy of imparting quality education using references from Quran and Hadith. For example when we teach the young students the water cycle of rain in foundation years, we always relate it to the statements of Quran. When we talk about family and respecting the elders, we draw examples from hadith and rich social/moral codes of Islam. This is where we stand out.”

Mental health is the most important aspect on campus.

School day always begins with the morning assemblies and routine presentations conducted all by students themselves which gives the confidence and makes them good orators. Physical exercise, martial arts training, and other outdoor activities lead to physical and mental health. At PES, these are imperative in building healthy individuals, who can make significant contributions in nation building. Incorporating teachings of Allama Iqbal’s perspective of progressive Muslim society into the curriculum - his views on life, science, humanity, religion, and patriotism takes learning to a whole new level.

Muhammad Amir, revealed it was his son’s very first day at school. The 40 year-old father had held the four-year olds hand as far as the classroom door before he said goodbye to him. “And he’s off. My boy is growing up,” he said with a whole host of emotions, as the father watched his son walk through the classroom aisle. More than anything, the proud parent, like many others, is confident and supports the new school’s unique education philosophy - to accomplish absolute excellence in classic ways of academics, sports and arts - to

focus on the young person’s personality in a wholesome manner. At PES, everything ordinary becomes special.

That is how the founder of the school, Begum Tazeen Mujahid, had dreamt it. “There isn’t a more important job than teaching and grooming our children. Education cannot be about creating somebody to fit into a pre-organized position. In formative years, children are taught to read and do mathematics. That is not what these classes are for, only. It is our responsibility to give children that opportunity to think flexibly so that they can adapt to the world as it changes. And that’s what we do,” said founder of PAFWA Educational System Primary School, Begum Tazeen Mujahid.



A Collage of various activities which regularly are carried out at various PES campuses spread across the country. (Photo: PAF archives)



## PES Campuses across PAF Bases

PAF Base, M MAlam
PAF Base, Rafiqi
PAF Base, Mushaf
PAF Base, Lahore
PAF Airmen Academy, Korangi Creek
PAF Base, Faisal
PAF Base, Masroor
PAF Base, Malir
PAF Base, Samungli
PAF Community Centre, Islamabad
PAF Base, Nur Khan
PAF Academy Asghar Khan
PAC Kamra
PAF Base, Peshawar
PAF Base, Kohat

At PES, it is never boring and never ordinary. Here children play important roles. They make their little dreams come true. Here, they surpass their own expectations and that of their parents. PES, shows what it is like to go to a very distinct school.

While students from all provinces are represented in PES, each campus follows the same standard curriculum. This allows students learning in Lahore or Karachi, to easily transfer to Quetta or Peshawar and continue with their education, when their parents are posted out. Students wear the same uniform, thus there is no competition over clothing brands or shoes. Some of the best responses have come

from the least expected and small cities. In PAF hometowns like Kohat and Samungli, parents see a change in their children, where curiosity for the academics is not squashed, where they see that a school is not just raising test takers.

All of this was probably not possible without Begum Tazeen Mujahid's team, who lent their philanthropic hands, moved heaven and earth, to leave their mark on an inspired system of learning that would help children achieve their potential.

The new school that allows children to learn, grow, interact, and build confidence, is still evolving, though. We all know what schools were like but this one stands out, where children can hardly wait for classes to begin. Parents know that PES is laying a solid foundation. They also know that their children are not customers here. All of those things go together with this idea of excellence and that combination of things is working really well right now. This sort of preparation for the future is not an alternative, it is imperative.

• 'Knowledge on Wheels' is another visionary step taken by PAFWA to introduce concept of 'Mobile Libraries' all across PAF Bases. (Photo: PAF archives)

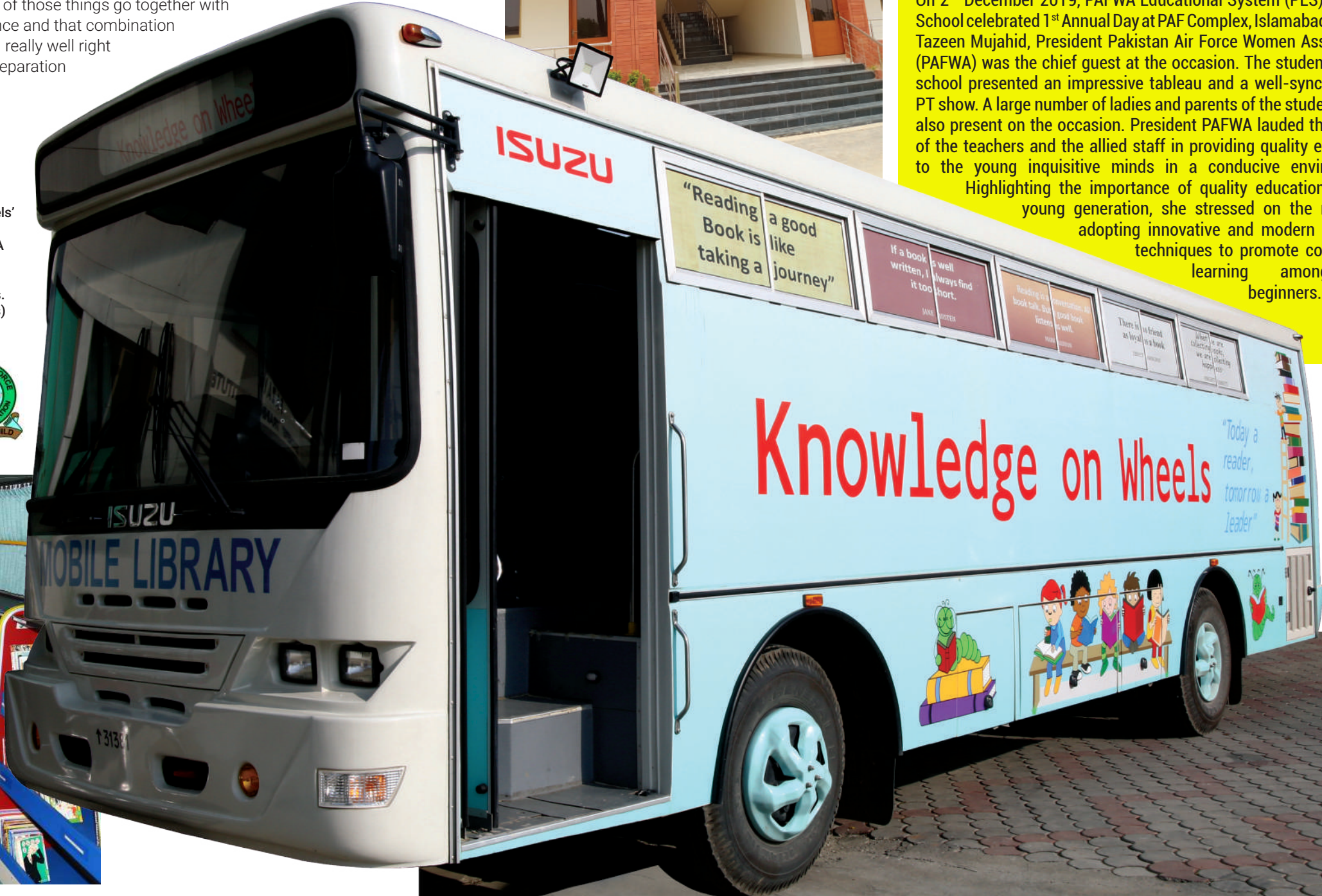


## PES PAFWA celebrates 1st Annual Day

On 2<sup>nd</sup> December 2019, PAFWA Educational System (PES) Primary School celebrated 1<sup>st</sup> Annual Day at PAF Complex, Islamabad. Begum Tazeen Mujahid, President Pakistan Air Force Women Association (PAFWA) was the chief guest at the occasion. The students of the school presented an impressive tableau and a well-synchronised PT show. A large number of ladies and parents of the students were also present on the occasion. President PAFWA lauded the efforts of the teachers and the allied staff in providing quality education to the young inquisitive minds in a conducive environment.

Highlighting the importance of quality education for the young generation, she stressed on the need for adopting innovative and modern teaching techniques to promote conceptual learning among the beginners.

Top Left: A panoramic view of PES at PAF Base Faisal. (Photo: PAF Archive)



# On The **EDGE** 18 Hours:

Alone at sea, a man has only himself and his will to live. If you do not believe in miracles, listen to how Muhammad Sajjad, hopelessly adrift in the Arabian Sea for more than 18 hours, completely at the mercy of the winds and waves, survives a fall and the sea. "Every part of it was a hellish experience", Muhammad Sajjad said.

Standing tall with his sails- Sajjad's story is the one which will keep captivating many for the times to come. (Photo: Air Cdre Muhammad Ali)



**H**is story is about an absolute miracle that Muhammad Sajjad will be telling for the rest of his life. It is one of the most riveting anecdotes of survival ever heard.

On 27 May, 2010, Muhammad Sajjad's practice run was cut short after wind surfing trials for the Asian Games were suddenly postponed. Sajjad and his team members decided to return to the Pakistan Air Force Yacht club. The trip back required sailing from Oyster Islands to the mainland, loading equipment into a truck and driving for more than three hours. The choice was obvious - to take the shorter route and wind surf back in about one hour long journey maximum.

Muhammad Sajjad and two other team mates set out at 3pm. Roughly 20 minutes into their journey, one of the team members decided to turn back after gusts became stronger and the swells grew bigger than the 7 meters tall sails. Ten minutes later, far out of sight of land the unexpected happened. The nose of Sajjad's surfboard slammed into a wall of water, breaking his speed to zero. His team member, roughly 500 meters to 600 meters behind him, did not see Sajjad go over in the choppy water.

Muhammad Sajjad had thought of risks but never imagined it would happen to him. Clutching the sail, Sajjad watched his board, what he thought was his only hope of survival, drift farther off and disappear. For the next hour, undercurrents pushed him deeper into the Arabian Sea. By sunset, he had drifted 15 kilometres into the open sea from the PAF Yacht Club.

Fear turned into panic, when he tried and failed to swim back against the inescapable currents. "At first I could not believe it. It was very isolating. I never felt so vulnerable. I was all alone in the sea, fighting the

elements, and battling to keep my sanity," Sajjad recalled. Back on land, all search and rescue protocols had been put into place immediately when his team mate reported Sajjad missing at sea. Detective work started and all kinds of inputs were put in place - if he was wearing a floating device, what the winds were doing, currents. It spat out thousands of computations and clues were picked up to narrow down the search.

Back in the sea, Sajjad realized that the sail he was clinging on to, one his last life lines, was fast becoming a burden, riding the under current, pulling him out into the sea. "Even though I had my life jacket on I did not want to let go of the sail. It was keeping me buoyant," he said. In an empty horizon, a vast sea, Muhammad Sajjad was a small speck floating, sometimes swimming in the lonely watery void. Although the water was warm, it was only a matter of hours before fatigue overcame him.

"I focused on staying afloat and alive and kept my hopes up," he said. His only hope was a rescue mission. The night brought with it a tantalizing sight - helicopters



going back and forth in the distance. He started waving and flagging. But they were looking in the wrong place. At Bundle Island nearby, the rescue team found his surf board but no footprints.

**“I was all alone in the sea, fighting the elements, and battling to keep my sanity.”**

By 2 am, Sajjad had used up his last scrap of energy to wave at the helicopter, which flew over him but missed him. It was a complete meltdown moment.

"I was alive but far from alright. A feeling of complete hopelessness had overcome me. I had begun saying goodbye

to the people I thought I would never say again. Life flashed before my eyes and I knew death was imminent and very close. I hoped I had done well in life and shown compassion and kindness," he said. Floating on his back, Sajjad slipped into unconsciousness twice or thrice only to wake up again choking on swallowed salt water when his head would sink. He would snap out of it and get his act together. There is something very pure about the action of trying to live. Some instinctive part of Sajjad stayed focused on life. Just as he thought there was no possibility of getting out of the sea alive, he saw

• Top: A bird's eye view of the Sajjad's journey along with timeline, illustrated through google maps.

• Bottom Left: Sajjad along-with other Pakistani athletes participating in 50th World Military Sailing Championship held in Finland in 2018.

• Bottom Right: Air Chief Marshal Mujahid Anwar Khan, Chief of the Air Staff awarding silver medal to Snr Tech Sajjad at the price distribution ceremony of 2nd CAS Sailing Competition.



silhouettes of trees spaced across the land. It was a lucky break since his ordeal began. Drawing on emergency reserves of adrenaline, he started swimming slowly, calmly and collected. Until he felt land, in waist deep water. He could stand. The next 100 meters or so he took every step carefully fearing not might plunge into a drop. He made it to the remote and desolate Bundle Island by 6am. His clothes and the life jacket had cut into his skin around his neck and in his armpits. He was ravaged with hunger, dehydrated and his body desperately weak. At the risk of being eaten alive by stray dogs, Sajjad decided not to get a shut eye. "Physiologically and mentally I was done. I was in no physical condition for a prolonged wait and I had accepted that I was completely on my own and took survival into my own hands. By daybreak I could see the Oyster Islands 5 kilometres away. Against every instinct, I went back into the water. I figured the waves would carry me," he said.

Surrounded by the immensity of the Arabian Sea, and just when his mind was once again about to be consumed by that horrific feeling of isolation, Sajjad was spotted by fishermen. "They asked me what I was doing in the water this early. I told them I had been lost at sea the entire night," Sajjad said. At the PAF base, the signal for casualty was out. A cheque for compensation money had been written. It was only a matter of time when it would be announced officially. But it was sheer elation when he walked in at his own funeral preparations. "I had everything to live for, my parents, my siblings and my fiancée. I had a chance at life and I decided to fight for it," he said.

Muhammad Sajjad returned to windsurfing, in the very waters that nearly took his life..

National Championships		
Year	Event	Medal
2009	Mistral Heavy National Sailing Championship	Silver
2010	Match Race National Sailing Championship	Silver
	Mistral National Sailing Championship	Silver
2011	Mistral National Sailing Championship	Gold
	RS:X National Sailing Championship	Gold
2012	Mistral National Sailing Championship	Silver
	RS:X National Sailing Championship	Bronze
2014	Mistral National Sailing Championship	Silver
2015	RS:X National Sailing Championship	Silver
2016	Leser Redial National sailing Championship	Gold
	Mistral National Sailing Championship	Gold
2017	Mistral National Sailing Championship	Silver
	RS:X National Sailing Championship	Bronze
2018	RS:X National Sailing Championship	Bronze
	J-80 Match Race National Sailing Championship	Bronze
2019	RS:X National Sailing Championship	Silver
National Games		
Year	Event	Medal
2013	32 <sup>nd</sup> National Games	01 Silver 01 Bronze
2019	33 <sup>rd</sup> National Games	02 Bronze
International Event		
Year	Event	Medal
2011	South Asian Beach Games (Sri Lanka)	Gold
2011	Asian continental windsurfing championship (Hong Kong)	4th
2018	Cism World	5th
2019	2nd CAS international open sailing championship (Pakistan)	Silver

• Bottom: Putting the past behind, Sajjad is back to do what he loved the most - surfing on clean tides. (Photo: Air Cdre Muhammad Ali)

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# CPEC: Opportunities in AVIATION

“The Sino-Pak mammoth project CPEC which has made global waves, will emerge not only as a strategic pivot but will also open a gateway of opportunities for the Pakistani aviation industry, an integral pillar of which is the Aeronautical City Kamra, Pakistan Air Force.”

A country's effective aviation industry can help it gain greater socio-economic benefits including; expanding connectivity to the world, greater access to markets and people, increased employment prospects and significant technology transfer opportunities. It also contributes to economic growth in terms of increasing investment, productivity, trade, and tourism. The aviation sector provides more than 60 million jobs globally and is one of the largest collective employers worldwide. In one way or the other,

almost all major industrial sectors are dependent on aviation sector. Aside from a few episodes of slowdown, the global aviation industry has expanded at an exceptional pace. Commercial aviation industry is one of the strongest rising markets on the global scene as air transport has grown by 60% over the last decade. Moreover, the aerospace industry is now considered “strategically important” in many countries as it encompasses defence aviation and space sector and has the potential to reap benefits beyond socio-economic ambit.

For Pakistan to keep pace with the world community in all domains of aerospace comprehensive planning would be required and a considerable amount of initial investment would have to be made. Nonetheless, alongside many other sectors of the economy, Pakistani aviation industry faces enormous challenges. However, regardless of the continued economic hardships faced by Pakistan, the military aviation industry has grown at an appreciable pace. The origin of military aviation industry in Pakistan can be traced back to the mid-1970s, when Pakistan Aeronautical Complex

(PAC) was established at Kamra where overhauling facilities were established for the French and Chinese aircraft of Pakistan Air Force. Over the years, PAC has become a state-of-the-art facility having the capacity to fulfil a large proportion of operational needs of PAF and at the same time has contributed towards economic growth by earning foreign exchange from exports of its products and services.

PAC now forms one of the core elements of national defence and is a growing hub of indigenization and self-reliance for national military aviation. It has the capability of overhauling different fixed and rotary-wing aircraft. Moreover, on the production side, Mushshak aircraft are being independently produced while JF-17 is being co-produced with China.

However, on the civil aviation side, the situation is different as PIA (and its technical, services subsidiaries), once considered one of the best in the world, has fallen behind considerably.

PAC Kamra has now attained such expertise and strength that it can promote the growth of aerospace in Pakistan and contribute towards national development, by supporting and facilitating the participation of private sector through capacity building in technological industrialization of commercial & military



aviation structure. However, it may face challenges while embarking on this course. The foreseeable challenges can include: the protectionist (and biased) policies of technologically advanced countries which often deny advance technologies to developing countries (transfer of technologies or “ToT”), the

under-active private sector related to aviation, inadequate government encouragement and appropriations for research in the field of aviation and funding shortfalls for development work. However, the China

Pakistan Economic Corridor (CPEC) can be considered an opportunity to overcome these challenges. CPEC is a strategically important project for both Pakistan and China. It is part of China's larger Belt and Road Initiative (BRI) which involves 60 odd countries. Through

CPEC, China has agreed to invest US\$62 billion over a period of ten years in different developmental and industrial projects in Pakistan. Being an important project of BRI, CPEC can help increase regional and international trade and economic development by closely integrating China, Middle East, Central Asia, South Asia, Africa and other parts of the world; with Pakistan as the pivot. Now in its second phase, CPEC will help jumpstart the economy of Pakistan at a time when severe external economic pressures and stagnating internal economic variables have been combining to hamper overall national growth. The Long-Term Plan (LTP) of CPEC insists on forming a goal assessment mechanism, described as “an assessment mechanism that shall be established to evaluate the

Top: The Pakistan Aeronautical Complex Kamra has been Pakistan's Aviation engineering wonder-child for decades, producing globally revered aircraft and equipment. The PAC is now evolving into an Aviation City, with further innovation and technological advancement of international standards on the cards.

Bottom: A futuristic bird eye view of Aviation City Kamra.



Progress on the China-Pakistan Economic Corridor brings with itself the prophecy of a boost in the aviation industry. As CPEC milestones are achieved, shining prospects for the Aviation business appear on the horizon gwadar airport



commercial and residential clusters with airports as their centre-point. This approach would not only have economic effects but will also long-lasting sociological metropolitan characteristics. Certain elements of an aerotropolis should be incorporated into the Aviation City project at Kamra. In an aerotropolis the airport is at the centre of the urban settlement. The residential areas are on the outskirts whereas the inner radius includes transport, industry, hotels, business, offices, R&D and education centres. An Aviation City at Kamra can be developed at a similar design where all these sorts of zones and services would be provided.

Further, it will also include a special economic zone (SEZ). An SEZ is an area designated for economic activities, and certain types economic

benefits are conferred to businesses in an SEZ including cheap land and factory buildings for lease; tax reductions and holidays; unrestricted remittance of profits; complete foreign ownership; disciplined low-cost labour; duty-free entry of materials and machinery for producing exports; special customs clearance, and

convenient infrastructure and services. Key economic activities taking place

implementation of major projects, assess the progress of the long-term plan in every aspect every five years and then update & adapt the plan accordingly". Aviation projects, such as the Aviation City at Kamra, can therefore, be proposed as one of the initiatives to be incorporated within the CPEC framework. The financial aspects of Aviation City can be analysed in accordance with the LTP, which declares that "China and Pakistan shall jointly prepare plans, divide financing responsibilities based on the project situation and their respective investment and financing strength, give play to their respective comparative advantages in project construction and implementation, and share fruits based on the match of their cost, risk and returns".

The Aviation City can be developed on the model of an "Aerotropolis" or as a special economic zone. An aerotropolis is an urban system wherein the airport, aviation industry, or aerospace sector plays a major part. The concept of aerotropolis has gained attention in the 21st century due to democratization and low-cost civil air traffic. The Centre for Aerospace and Security Studies (CASS) has done important work on aerotropolis. According to this model, the developmental pattern of the 21st century would be to construct

**“ In an Aerotropolis the airport is at the centre of the urban settlement. The residential areas are on the outskirts whereas the inner radius includes transport, industry, hotels, business, offices, R&D and education centres. ”**

convenient infrastructure and services. Key economic activities taking place

Left Page Top: Special Economic Zones are a key component of the China Pakistan Economic Corridor. Projected as investment and business havens for Direct Foreign Investments, SEZs will be consolidated business hubs established along the route and in industrial zones across Pakistan.

Left Page Center: The Honorable Prime Minister of Pakistan Imran Khan lays the foundation stone of new International Gwadar Airport.

Bottom: A majestic view of Pakistan Aeronautical Complex Headquarters at Kamra.

in an SEZ include industrial development, services sector, IT and digital services, shipping and transport, logistics, and small-medium enterprises (SMEs). The development of an SEZ will help bolster economic activity at the Aviation City as companies are likely to get significant benefits by investing there.

Government of Pakistan has proposed 9 SEZs initially under the auspices of CPEC. These SEZs were announced under the SEZ Act 2012 amended in 2015. For establishing an SEZ at Kamra the SEZ Act should be consulted. Furthermore, a CPEC-SEZ cell has been established by the Board of Investment (BOI) which assists stakeholders regarding the matters of CPEC and SEZs and for formulating the Kamra SEZ this cell should be consulted.

Given the benefits that the Aviation City is expected to produce; (Figure 1) certain challenges might hinder its progress. Some of the challenges that Aviation City might face include strategic and diplomatic difficulties, shortcomings of civil aviation sector, need for adherence to policy requirements and resource constraints that include funding, human resource, spatial and timing constraints, and environmental considerations. If these

## Benefits of Aviation City

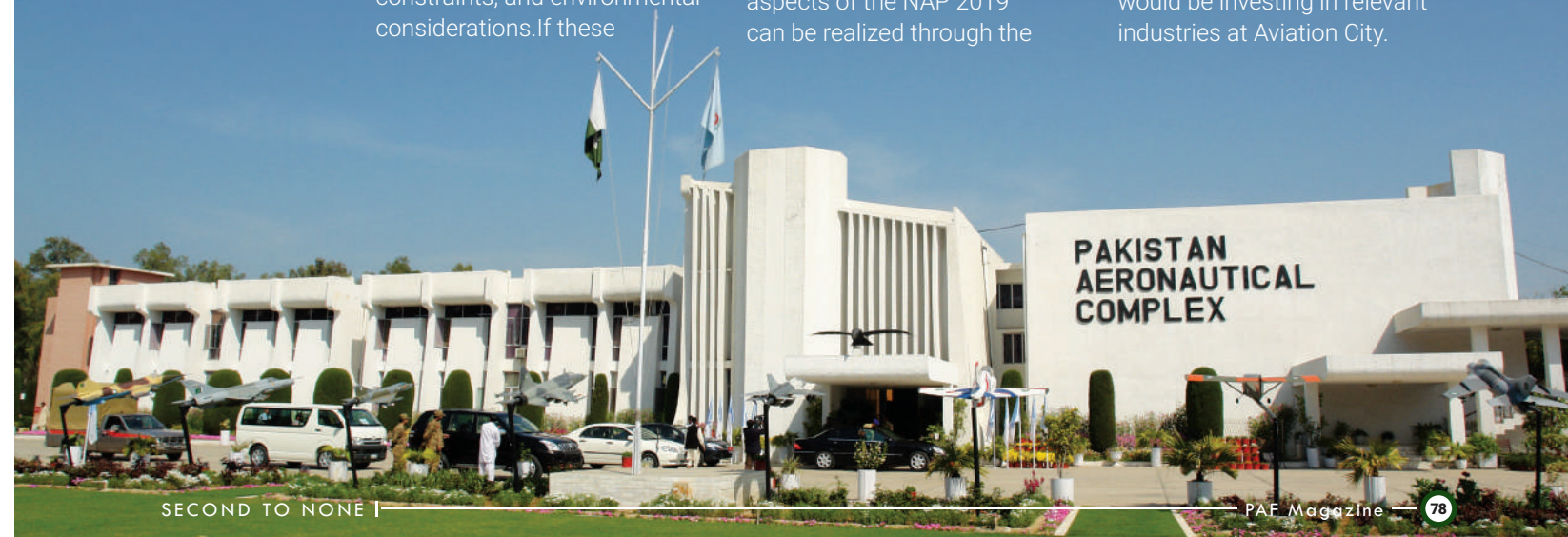
For undertaking a project of this magnitude and strategic importance, it is necessary to examine the benefit that can be gained from it. The benefits that can be gained from an aviation city are enumerated below.

- Achieving Future Indigenization: It will help lower dependence on the import of equipment and will make Pakistan self-reliant and autonomous as localized production will increase.
- Technological Excellence & Advancement: Technological excellence and advancement can be achieved through mobilizing stronger and better-developed R&D capabilities.
- Economic Development: Aviation City can contribute towards national economic development by creating jobs, generating business, help increase public-private partnerships and international joint ventures and investments.
- Socio-institutional Goals: It would help achieve socio-institutional goals by developing human resources and human capital. Moreover, it will contribute to better civil-military aviation cooperation.
- National Aviation Policy (NAP) 2019: Actualisation of various aspects of the NAP 2019 can be achieved through the aviation city.

Figure: 1

challenges are over come, then the Aviation City can be a success story. Furthermore, for the implementation of Aviation City, PAF should focus on advocating the synergies between NAP 2019 and Aviation City as many aspects of the NAP 2019 can be realized through the

construction of Aviation City. Moreover, input from other stakeholders, both government and private would be important because one of the goals of Aviation City is to assist and promote the civil aviation sector. Agreements should be signed with entities that would be investing in relevant industries at Aviation City.





A master design plan should be made for the Aviation City project, as without a design plan its implementation would not be possible.

Consultants and specialists in urban planning, architecture, engineering, and the environment may be engaged.

Moreover, the importance of research cannot be ignored in an aviation city. A campus of Air University is under construction at Kamra, which will offer relevant programs according to the requirements of Aviation City. Research labs may be constructed for R&D at the Aviation City as well.

Manufacturing is already being carried out at PAC to meet the requirements of PAF. PAC's product range needs to be diversified to include commercial items which can be sent to the market; it can be a source of revenue generation for PAC. Once operational, the Aviation City will significantly contribute towards economic

**“Pakistan's Gwadar International Airport will be the largest in the country. It will be the second facility in Pakistan to cater for Airbus A380 'Super Jumbo', the largest passenger airliner of the world.”**

uplift of Pakistan.

At present, projects connected to all multinational economic activities across the world have come to a sudden halt with no

exact commencement time in sight, CPEC not being an exception. Current outbreak of Covid-19 as a pandemic, is posing serious challenges to the ongoing economic and development projects all across the globe. Despite the fact that situation in Pakistan is under control, economic and social uncertainties caused by the pandemic, especially lockdown(s) across the

country, have been increasing. With China being epicentre of Covid-19, the game changer project of CPEC is also being affected by the Covid-19. Before the outbreak, many of Chinese workers and engineers working on different projects of CPEC travelled back to China to

Top Left: A panoramic view of newly constructed Air University Campus at Aviation city Kamra. (Photo: PAF Archives)

Top Right: Air Chief Marshal Mujhaid Anwar Khan, Chief of the Air Staff along with Mr Shafqat Mehmood, Federal Minister for Education inaugurating the Air University Campus at Aviation City, Kamra. (Photo: PAF Archives)

## CPEC-SPECIAL ECONOMIC ZONES

- 1 Allama Iqbal Industrial City, Faisalabad, Punjab  
3,000 Acres
- 2 Industrial Park on Pak Steel Mill land in Port Qasim Near Karachi, Sindh  
1,500 Acres
- 3 Rashakai Zone, M-1, Nowshera, KP  
1,000 Acres
- 4 Bpstan Industrial Zone, Baluchistan  
1,000 Acres
- 5 ICT Model Industrial Zone, Islamabad  
200-500 Acres
- 6 Mohmad Marble City, Mohmand Agency, KP  
300 Acres
- 7 Dhabeji, Thatta, Sindh  
1,530 Acres
- 8 Moqpondass, Gilgit, Gilgit Baltistan  
250 Acres
- 9 Mirpur, Azad Jammu Kashmir  
1078 Acres

celebrate New Year; but due to the worsening situation and lock down, these Chinese engineers, experts and management people could not return to Pakistan. The pace of work on the Aviation City project has also stalled because of the absence of experts and halt of work on the construction sites due to lockdown. Hopefully the current lockdown in Pakistan may be causing delays in projects but this is a temporary situation. Now that the Government of Pakistan has eased the lock down, allowing industries to reopen, situation shall progressively get back to normal, albeit slowly. Since CPEC is a long term project, it would be able to adapt to the changed environment over time.

## PAF Takes a Lead Role

**ISLAMABAD:** Under the auspices of Pakistan Air Force (PAF), an international seminar titled “Pakistan: The Future Regional Aviation Hub” was held at the Air Headquarters Islamabad on Thursday where Air Vice Marshal Aamir Masood delivered the opening address at the occasion.

Federal Minister for Federal Education and Professional Training Shafqat Mahmood and Advisor to the Prime Minister for Institutional Reforms & Austerity Dr Ishrat Hussain were keynote speakers at the seminar.

While addressing the audience, Chief of the Air Staff Air Marshal Mujahid Anwar Khan said, “Pakistan Air Force being the largest aviation organization in Pakistan with the vast experience in aviation has taken this initiative to unite the regional aviation community to build an aviation hub which will provide profitable solution to national and foreign investors. I am confident that this initiative will prove to be a beneficial for the aviation industry of Pakistan.”

Speakers from aviation and aerospace industries of China and Turkey delivered lectures/presentations to share their views on contemporary issues related to aviation during the seminar.

The fundamental purpose of the interactive forum of the seminar was to envisage in engaging the complete spectrum of Aviation industry, including military and civil aviation regulators, operators, and academic Institutions, to discuss the opportunities arising for the national aviation industry in the wake of the CPEC and BRI initiatives.

Senior serving and retired PAF officers, Pakistan-based foreign defence/air attaches and select academia notables from various educational institutions attended the seminar.



# Rashidabad Angels' Abode



“Set in rural Sindh, the Rashidabad Complex is an oasis, both in the literal and metaphorical sense. Just as it is a scenic sanctuary in an unforgiving land, it is ray of hope for individuals who have not been dealt a fortunate hand. Set amongst flourishing mango coppices, the entrance to Rashidabad is like walking through a portal to a serene, content world. The sight that awaits you is even more beautiful and equally inspiring. One sees throngs of playing, joy-filled children and content, helpful adults, all united in their pursuit of betterment of their little world and lives. The magnitude and scale of Rashidabad is truly an entity one needs to see to believe.”



It was the night of 13th December, 1971. The air in the underground Ops room at PAF Masroor was heavy, to say the least.

Grief seeped from the walls of Masroor air base, draping the young pilots and navigators present in the room. Everyone in the room could feel it. The tangible, gaping absence of their comrades and brothers in arms. Comrades who they had laughed with, had broken bread with. It was a heavy night, and the winds howling outside seemed to be a manifestation of their stifled sorrow. Earlier in the day, the No 7 Squadron, equipped with mighty B-57 Bombers, had flown to various IAF bases to take down enemy assets. The warriors, as expected, had dealt significant damage to the enemy. But it came at a cost. 6 out of 12 aircrew members were lost in the foray, giving their lives to make the sortie count.

Flt Lt Shabbir Khan was amongst the first to know of the tragedy. The 6 martyrs were from his squadron. He now sat with his colleagues, staring at the cup of tea in his hands,

mulled over a tiny exchange he had had with his Flt Cdr (Flight Commander) in the Ops room. Before his comrades had flown out to bomb Indian targets, he had taken a 5 rupee note from his Flt Cdr's wallet to give to a helper, who needed medicine for his son. When he had tried to return the wallet to the Flt Cdr, he refused, saying "I'm flying out. If I come back, I'll take it. If I don't, use it for something good." These words, which had seemed idle before the martyrdom of his colleagues, now seemed to lay bare the fleeting nature of a pilot's life to Flt Lt Shabbir Khan. He realized that his life and the lives of his colleagues were so evanescent in the material sense that it made no sense to cling on to worldly possessions. He, along with

the others present in the room, were about to fly out on another mission. The B-57s were being loaded with the payloads and the equipment checks were being carried out on the tarmac outside. On top of the grief of their fallen brothers, he and his comrades knew that there was a very solid possibility that they wouldn't be coming back alive from their mission. However, there was no fear in the Ops room and no remorse, just a grim acknowledgment of an undeniable truth. Rather than be intimidated by the notion, Flt Lt Shabbir Khan decided to take advantage of it. "Only 6 or 7 returned...this is how fleeting life is. We don't know whose turn it is next. Maybe all of ours." Flt Lt Shabbir Khan words echoed in the silent room.

Left Page: The prestigious Khawaja Yaqub day school. Built along a lake, the scenic facility holds the capacity to educate about a thousand deserving students.

Top: A-Stretching over a whopping 100 acres, Rashidabad complex seems like a lush, tree-filled heaven, in more ways than one.

Inset: Air Cdre Shabbir Ahmed Khan, the enigmatic man behind the success of this mega city, whose tireless efforts have given thousands respite.

“Set in rural Sindh, the Rashidabad Complex is an oasis, both in the literal and metaphorical sense; it is a ray of hope for individuals who have not been dealt a fortunate hand.”



## Shabbir: A War Hero of 1971 War

On the night of 4 December 1971, Indian Osa missile boats attacked the Pakistan Navy, hitting a destroyer and minesweeper southeast of Karachi. The menace of Indian missile boats was a very serious threat not only to the Navy but also to other Pakistani ships in the Arabian Sea and in the Karachi harbor. PAF retaliated by causing extensive damage through a single B-57 Bomber attack on Okha naval base in India. The bomb scored direct hits on fuel dumps, ammunition dump and the missile heads jetty. The missile boat attacks on Pakistan naval installations ceased thereafter. The mission was led by FLt Lt Shabbir Ahmed Khan as Captain and Flt Lt Ansar as navigator.



## Deaf Reach School & College

Deaf Reach's Rashidabad campus is a custom built campus with capacity for 500 children which has been generously donated to FESF. The construction was single handedly financed by Mr. Khurram Hussain and Sameera who named it after their mother "Begum Rehana Nazar". This campus was inaugurated by Mr. Col. Nazar Hussain and Mrs. Rehana Nazar on 14 th Nov '14 with over 20 classrooms, vocational training labs and residences, Deaf reach Rashidabad is a center of excellence for Deaf Education in the country.



"These material things aren't for us. We don't need them. Let's leave the perishables behind for people who deserve them more than us." Flt Lt Shabbir Khan's words touched the souls of his comrades. There was no denying the good sense of it. They needed little persuasion, being compassionate men themselves. They all gave graciously and the total amount that was gathered that night was Rs 2970/-. And, that was the genesis of Rashidabad, in true sense. Even today, if you go through National Bank Masroor's old, manual records, you will come across an account titled 'Shaheed Welfare Fund'. This is how it all started.

### Humble Beginnings

The war was over but not the passion to do something for the betterment of the nation. The spirit which took root in the underground ops room continued to prosper every day. The initiative took off rapidly. Air Cdre Shabbir Khan was known for his character and was

immensely charismatic. Initially, the charity was used to give money to the deserving. Then, it was used to help people erect small business or buy assets that would make them self-sufficient, like sewing machines, cycles, carts, poultry and the like. When Air Cdre Shabbir Khan was transferred to other bases, he took the idea with him.

**“Air Cdre Shabbir along-with 16 passionate comrades decided to commute their pensions to open up a fund for establishment of Rashidabad.”**

"Flying the B-57 bomber, I along with my navigator Flt Lt Ali used to fly extensively over every nook and corner of Pakistan. During flying we use to pinpoint locations to select a site for setting up educational institutes. This practice helped us a lot and continued for some time", Air Cdre Shabbir reminisces.

Fast forward to 90s, the dream started to come to life. Air Cdre Shabbir became the Base Commander of PAF Base Faisal at Karachi and thus started the chain of events which finally gave birth to Rashidabad. Air Cdre Shabbir and his passionate

## Sultan Ali Campus for Visually Impaired

Mr Shahnawaz (USA) sponsored the entire cost of the building in the name of his honorable father Mr Sultan Ali.

RMWO started the construction on 10th October 2013 and the campus was commissioned in October 2015 incurring a cost of Rs. 100 million.

The campus can cater to 300 day students and include residential facilities for 100 boys & girls each. It has been handed over to IDA-RIEU Welfare Association for operations.



colleagues knew that they had to elevate society at a grassroots level. Education was the first and obvious contender. They were also aware that educating a rural population was much more complicated than constructing a school. For a good school, the vital ingredients are good teachers. These teachers would need accommodation, healthcare and other facilities. Air Cdre Shabbir Khan and his partners also wanted an orphanage, a school for the differently abled and other institutions. Such ambitious plans required an ample expanse of land, which required an ample amount of

capital. Similarly, if you open up a hospital, you not only need doctors but also their accommodation, schools/ day cares for their children and other allied facilities. This all led them to finalize the idea of developing an entire city with all required facilities, deep within rural areas of Sindh where people needed it most.

Air Cdre Shabbir along-with 16 passionate course mates

decided to commute their pensions to open up a fund for this noble cause. They didn't have deep pockets but their hearts were rich enough.

**“Air Cdre Shabbir and his passionate colleagues knew that they had to elevate the society at its grassroots and education was the first contender.”**

They collected around 25 million rupees, instituted a fund and bought around 100 acres of land near Hyderabad Sind for the development of new city. "For initial three to four years we were inhaling dust and nothing much, no end in sight. It is Mission Impossible, many argued, but

**Bottom: Disciplined yet never uninteresting: Students and faculty gather to hear a rousing speech from a visiting orator in a morning assembly at SST Public School.**





## Project Zaid

54 deserving IDP (Internally Displaced Persons) students were picked up from the Northern Areas by RMWO and inducted at the YK Academy in October 2010.

At the time of reporting these children only knew their mother tongue. All of them have since joined the main stream and a few have joined SST Public School on merit. More recently an additional batch of students have been picked up and inducted in the Hunar Foundation for one year Tech Training.

we remain committed and had full faith in Allah Almighty." And then, divine help started to pour in. Organizations, wealthy people and govt/ non-governmental organizations started to collaborate in this noble cause. Then on, there was no turning back.

### Rashidabad It Is

Such an ambitious project required a worthy name that would encompass the true compassionate spirit of the endeavor. "I always wanted to name the city after any of the great PAF Shaheed in the likes of Rafiqi, Yunus, Iqbal...as they were our true heroes and role models", reminisces Air Cdre Shabbir. However, fate had something else in store.

What a coincidence. The day is 13<sup>th</sup> December, 1997, again, exactly 26 years after the Jamnagar attack during 1971 war. A young and energetic Flt Lt took off from Masroor air base along with his comrades to fly to Sonmiani Range, on a routine operational training mission. Just after take off, the fire warning light comes 'On'. It is every pilot's worst nightmare. The engine had caught on fire. The pilot Flt Lt Rashid, call sign Red 4, declares the emergency situation to the leader of the formation and authorities on ground, who in turn asks him to eject immediately. Red 4, without a moment's hesitation, refused outright. He knew he was



The man whose sacrifice was immortalized: A shot of the handsome Flt Lt Rashid Ahmed Khan (Shaheed) standing tall along-side his Mirage.

flying over densely populated areas of Karachi. He was well-aware that hundred of civilians on ground would die if he ejects from the aircraft, now.

**Red 4: 'Unable to eject! Over population!'**

**Leader: 'EJECT!'**

**Red 4: 'I have hydraulic lights on.'**

**Leader: 'EJECT, EJECT, EJECT!'**

**Red 4: 'Smoke in the cockpit!.....'**

Those were the brave pilot's last words before he crashed his jet in an unpopulated area, saving hundreds of lives while giving up his own. It was not a spur of the moment decision. Just a day before

## Bilquis Mushaf Medical Complex (BMMC)

A 200 bed Bilquis Mushaf General Hospital was inaugurated by Air Chief Marshal Tahir Rafiq Butt CAS PAF on 20th February 2014. The facilities of Pathological lab, X-Ray, Peds & Gynae Operations and Dialysis Center (Zaheer Hassan) are currently extended to the rural under-privileged at subsidized cost. Efforts are underway to establish an ICU and a Cardiac Centre.

I-Care Foundation, Rajby Trust and INFAQ Foundation are the main donors for the operations.



the Flt Lt had made the promise to his comrades that if he was ever in such a predicament, he would gladly lay down his life to save others. He knew exactly what he was doing.

This fearless pilot was Flt Lt Rashid Ahmed Khan, the only son of Air Cdre Shabbir Ahmed Khan. "I had been granted what I had prayed for, all those years ago." Says Air Cdre Shabbir Khan, his eyes moist but a judicious smile lingering on his face. "I was out of the country when it happened. The project was already planned by my colleagues. I came back and my relatives received me at the airport. While everybody met me with weeping faces, there was one colleague who met me with a content expression.

"Shabbir, you have asked me to find a name for the project which I was unable to pick thus far. I have now found a suitable name. It should be named **'Rashidabad.'**"

Air Cdre Shabbir Khan's family legacy doesn't end there, however. Shabbir Khan has a grandson who was recently joined the PAF following the legacy of his family. His name, as you've probably already guessed it by now, is once again, Rashid.

### Rashidabad

Rashidabad complex is Air Cdre Shabbir A. Khan personified. It is a welfare city in the true sense of the term. It is a welfare project so vast and diversified in scale, it is almost unbelievable. However, despite its size, the establishment is immaculately managed by Rashid Memorial Welfare Organization (RMWO). Rashidabad is a multi-dimensional welfare project. Spread over a vast 114 acres, Rashidabad has grown to be a Shangri La of sorts for the

deserving. The compound caters to 4 broad categories, which can be classified as Education, Healthcare, Socio-economic and Environment.

Quality education for all is Rashidabad's core competency. It has multiple diversified educational facilities run by PAF and several welfare organizations which cater to different areas and expertise. PAF's Sargodhian Spirit Trust set up one of the first school of Rashidabad in 2005. Residing in an imposing yet well-designed red brick building, the SST campus is home to high-spirited students from all over the nation. "We started with just 73 students."

“Spread over a vast 114 acres, Rashidabad has grown to be a Shangri La of sorts for the deserving.”

Air Cdre Shabbir reminisces, "Thousands of students of IGCSE and A-Levels have passed out since then. The project is being run by PAF's

Old Boys Association Sargodha and they are doing a wonderful job." Another day school is the Yaqub Khawaja Academy. Built right beside a serene lake, the academy can cater up to a thousand deserving students, most of whom are provided with free uniforms, books and transportation.

The Rubab Kassam Campus of TCF (The Citizens Foundation) in Rashidabad can accommodate more than 1500 students at any given time. Owing to the overwhelming number of students, the facility now accommodates 2 shifts. The gender ratio is 60% girls and 40% boys, a much-needed percentage to battle the deficit in female education.

Another faction of PAF not be left behind in humanitarian efforts is the TST (Topian Spirit Trust), a trust formed by the alumni of old students of prestigious PAF School Lowertopa at Murree. TST has

## LRBT Free Eye Hospital

A 50 bed Eye Hospital was constructed by RMWO (dedicated to Salim A Shaikh) at a cost of Rs 40 million and handed over to Layton Rehmatullah Benevolent Trust (LRBT) for operations. LRBT hospital was commissioned in June, 2008.

On an average over 400 outdoor patients are treated daily. In addition, around 50 eye operations are performed on a daily basis.



erected an educational facility in Rashidabad. Walking within its walls, one cannot help but be impressed by its well-planned layout and the facilities it offers. Featuring libraries, an auditorium, cafeterias, a museum, digital learning labs and an open-air atrium beside the usual academic wings, the complex is very much on its way to produce exceptional students.

Since Rashidabad is holistic welfare project, it also has extensive facilities for differently abled people. The two main institutions which carry this noble duty is Deaf Reach School and College and Sultan Ali Campus for the visually impaired. Deaf Reach is a program of FESF and teaches deaf individuals applicable skills through its well-equipped classrooms, vocational labs and classrooms. The Deaf Reach campus was donated by Mr. Khurram

## Dar-ul-Sukun

RAJAB Ali KULSUM BAI Campus for Physical/Mentally impaired & Senior Citizens Home- operated by DARULSUKUN



Hussain and Sameera who named it after their mother "Begum Rehana Nazir", who also had the honor of inaugurating the facility. The visually impaired are looked after in Sultan Ali Campus for the Visually impaired. With a capacity of 300 students and a housing capacity of 100 students of both genders, the facility has proven itself to be a God-sent for visually impaired individuals.

Specialized education is also provided in the expansive Hajiani Ashraf Khatoon Technical Institute, run by The Hunar Foundation. The campus is affiliated with City & Guilds – UK and offers courses in General Electric, Mechanics, Plumbing, Welding, Air Conditioning and several other disciplines. Another vocational training program is offered by DMKM Vocational Training Center for women, which has been set up in the basement of the Khawaja Yaqub Academy.

RMWO has also extended its helping hands to surrounding villages. Suffah Literacy program, run by Mustafa Benevolent Trust and NEDians Social



Welfare Trust, provides free books to students of schools in nearby villages. Another ambitious outreach project is 'Fatima Literacy' program for children who can't attend school, providing them an alternative in the basement of Masjid-e-Shahbazi, Rashidabad's resident mosque.

After devastating floods of 2010, 54

marginalized IDPs were picked up from Northern Areas and enrolled into YK Academy as a part of an initiative termed 'Project Zaid'. Confused and desolated, the children could only speak their mother tongues when they arrived from their ruined lives. But with gradual and focused attention, the children came out of their shells, eventually being enrolled into SST and TCF Schools. They're now well on their way to becoming happy, well-adjusted members of society.

### Health

Rashidabad has multiple medical facilities which provide holistic and competent health coverage to the underprivileged. From expansive, well-equipped hospitals to mobile van clinics that travel to the patients' doorsteps, Rashidabad strives to ensure that healthcare is available to all who need it.

With an impressive capacity of 200 beds, Bilquis Mushaf General Hospital houses departments for pathology, radiology, pediatrics, gynecology, a dialysis center, an ICU and a cardiology center. Competent doctors and healthcare staff have been brought over from all over the country to provide the best care to the patients. BMMC has been made possible with the donations from i-Care Foundation,

Rajby Trust and INFAQ Foundation.

Another facility that proved itself a blessing for the locals is the LRBT Free Eye Hospital. Constructed by RMWO and handed over to LRBT for operations, the hospital has a capacity of 50 beds. The hospital treats hundreds of patients daily, which includes surgeries, as well. Rashidabad also boasts a Blood Bank and Transfusion Centre run by Fatimid Foundation. The facility treats a substantial number of thalassemia and hemophilia patients. In addition to these physical hospitals and facilities, RMWO has come up with another ingenious way to provide healthcare to the deprived. 4 mobile van clinics can be seen zooming about in a 15 kms radius of Rashidabad. Carrying a doctor/dispenser and equipped to prescribe and donate medicines for all common ailments, the mobile clinics treat 15 to 30 patients each, every single day.

### Socio Economic

RMWO's welfare efforts are,



at times, the only hope for some individuals. Rashidabad has projects that helps the underprivileged not only survive, but it aids them in getting back up on their feet and live normal lives. Spanning from free meals, clean water to an orphanage and seniors home, Rashidabad is a sanctuary that welcomes all. The perfect manifestation of this concept is the Amzi Home. Built and managed by Mustafa Benevolent Trust (MBT), Amzi Home is a safe haven for

orphans, the destitute and widows. Elevators make every floor accessible to the elderly. The children grow up in the care of dedicated foster mothers. The pleas of laughter from children and the content expressions of the adults is the highest testament to the quality of life that Rashidabad provides. Rashidabad also welcomes differently abled children with its Rajab Ali Kulsoom Bai Dar-ul-Sukoon facility. Physically and mentally challenged children

### Blood Bank & Tranfusion Centre

A dedicated building, Nabath Sultan Ali Center, sponsored by Mr. Shahnawaz (USA) in the name of his beloved mother was commissioned and inaugurated jointly by Nabath Sultan Ali and Lt. Gen. Moinuddin Haider on 23rd March 2013.

The Blood Bank and Transfusion Center is being run by the Fatimid Foundation. Over 200 patients have been registered for regular blood transfusion (Thalassemia & Hemophilia) and at a time 21 patients can avail the facility. As many as 178 Thalassemia and 30 Hemophilia are registered at the Centre as of December 2016.



### AMZI Home

AMZI Home constructed at a cost of Rs.45 million is a magnificent purpose-built structure to house 288 orphans/destitute and 70 widows. This has been wholly built and managed by the 'Mustafa Benevolent Trust'.



Left Page Above: Unity through pride: Excited students from SST School sit cross-legged to design the initials of the facility that has changed their lives forever.

Top: The pride of PAF's Old Boys Association: A bulk of SST School students have moved abroad for studies, become a part of the forces and done something equally promising for themselves.

Bottom1: Four Friends catch up after classes: Bonds that are formed in Rashidabad endure a lifetime.

Bottom 2: Students jovially walk to class in their trademark crimson pullovers.

have little or no consideration in rural Sindh and that is exactly why such a facility was so direly needed. Rajab Ali Kulsoom Bai has the capacity to hold 250 differently abled children. The facility also boasts the ability to house 100 senior citizens within its walls.

Rashidabad also boasts an Islamic center set up in a mosque that can host a staggering 4000 namazis at any given time, with a space reserved exclusively for women. Other projects include a kitchen which provides subsidized meals for patients and their attendants, laborers and anybody else who requires it and a microfinance network which provides small loans to deserving people. Named 'Batool Shah Microfinance', the project has already doled out millions to thousands of beneficiaries.

### Life in Rashidabad

Air Cdre Shabbir Ahmed Khan had the insightful foresight to know that in order to make people reside in Rashidabad, it had to be an oasis smack middle of the Rural Sindh. "We knew that we needed competent workers. And competent workers deserve a good environment. Its not easy living out here." Contemplates Air Cdre Shabbir Khan "We had to design a place that would be a pleasure to live in." 'A pleasure to live in' would be an apt description for Rashidabad. Covered in mango orchards, lush green gardens immaculately maintained and efficient maintenance systems, the welfare city is a near-perfect blend of nature

and man-made structures. Rashidabad has 17 bungalows and several apartment complexes for each of the facilities. The apartments have beautiful views and are well-furnished. Rashidabad is supplied water by Amzi filtration plant, which uses reverse osmosis filtration to provide Rashidabad with fresh drinking water. The residents have an ample arsenal of activities to entertain themselves with. You can see people engaged in squash matches in Rehana Nazar Squash Complex, which hosts junior squash championships every year. Then, there's the ANJ Community Center, which has people having relaxed billiards sessions, intense table tennis matches or contemplative chess sessions. All sorts of consumables can be bought at the General Store. Then, there's the beautiful lake in the middle, which gives the entire complex a magical aura. Walking besides it in the night, with a calm, soothing wind on one's skin is a feeling that remains unmatched. Access to cities has been made easy by various subsidized transportation services. To top it off, Rashidabad boasts its own Railway Junction which



### Rehana Nazar Squash Complex

Two squash courts, complete with wooden floors and glass doors meeting international standard are available to the squash enthusiasts. Entire funding was received from USA for this purpose and it was activated in August 2009. It has been named after the donor's family as 'Rehana Nazar Squash Complex'. National Junior Squash Championships are held every year at the complex.

connects it to the rest of Pakistan.

### The Future

It is said that like a pebble thrown into a pond, a good deed can create ripples that extend far beyond the initial splash. The same can be said of Rashidabad and Air Cdre Shabbir Khan. "The collaboration of RMWO and PAF has proved itself to be so successful that it has been decided that the endeavor shall be replicated throughout the country." Air Cdre Shabbir Khan informs us with pride "2 projects that are making significant progress are Alamabad and Yunusabad. And this is just the start."

The first project that is underway is Yunusabad. Located on Samungli Road, Quetta, the complex sprawls over a whopping 100 acres of land. The project has been named Yunusabad

to honor the first shaheed of 65 war, Flt Lt Yunus Hussain, S.J. Located near Swabi Interchange, Alamabad is the second project. It has been named after the legendary fighter pilot of PAF, Air Commodore M M Alam (late). The project has had a jump start by a donation of 1000 kanals of land by the locals. PAF in collaboration with other organizations is make all efforts to complete this mega project in time.

“One can't help being awed by the trajectory of events that led to the creation of the magnificent city-Rashidabad.”

Another project that RMWO is a part of is the Tehsil Headquarters Hospital, Fort

Munro. In an agreement signed the Punjab Primary & Secondary Healthcare Department and the Pakistan Air Force, the PAF has been given administrative control of the hospital. PAF, in turn, has brought in RMWO and Air Cdre Shabbir Khan to design and implement the infrastructure of the hospital. Earlier, under an MoU between the PAF and the School Education Department, PAF agreed to set up a cadet college over 100 acres at Fort Munro. The Punjab government will also contribute Rs1 billion to the project.

If one mulls over the tale of Rashidabad and its upcoming siblings, one can't help being awed by the trajectory of events that led to the creation of something so magnificent. The ultimate sacrifice of Rashid proved to be a butterfly effect of sorts that engulfed Air Cdre Shabbir Khan, his family and then hundreds of individuals in its wake. It is a perfect example of how resilient the human spirit is and how we can transform a tragedy into something eternally remarkable and inspiring.

Left Page  
Bottom: Chief of the Air Staff, Air Chief Marshal Mujahid Anwar Khan along with Asad Qaiser, Speaker National Assembly, at the foundation laying ceremony of a 200-bed hospital and a grand mosque at Alamabad Welfare Complex near Swabi.

Bottom: A gleam of warm, hopeful sunshine on a calm Rashidabad is the perfect metaphor for what the complex means for many of its inhabitants.

### TST Academic Campus

TST Academic Campus operated by PAF Lower Topa Old Boys Association. Inaugurated by ACM Mujahid Anwar Khan on 26<sup>th</sup> Feb 2020.





# AIR CDRE A POLE STAR OF PAF TUROWICZ



“This is the story of a Polish aviator who was instrumental to the ascent of the budding Pakistan Air Force. Foremost in nurturing the force when it needed it most, Władysław Turowicz has left a deep mark on all the institutions and comrades that had the fortune of having him in their midst. From x to y, his contributions are countless and too many to be listed. The Pakistani nation and especially PAF shall remain indebted to this great hero who contributed so much for the progress of this great country.”

On board Sabena Air flight is a seasoned Polish military aviator, Władysław Turowicz. The flight has taken off from London Heathrow on the morning of 13<sup>th</sup> December 1948. It would last for three days routing through three continents: Brussels, Cairo, and Damascus for its final destination at Karachi. Turowicz is lost in deep thoughts. The fear of unknown and what all lies ahead in the country of his destination is stirring his mind for quite some time. Thoughts of whether, he made the right decision by accepting the offer made by the Pakistani High Commission to join the nascent Royal Pakistan Air Force, makes him somewhat anxious. He is also worried about his beloved wife, Zofia and two adorable daughters Anna, Magda, who are left

behind in England. However, he has full faith in destiny and above all in his incredible capabilities. The flight lands at Karachi on 13<sup>th</sup> December, late evening. The warm and humid air welcomes him as he climbs down the stairs of the aircraft. His three years contract in Pakistan was only a sign of things to come. He will now begin his rise, gaining through the ranks gradually, to the top in military and civil services and become a patriotic Pakistani on the way. His legacy has been documented and his life's work done. It tells something about his strong character unwilling to give up at any cost. This is the tale of utmost devotion and endless love for the country he held allegiance to, till the very last....

#### Early Years

Władysław Józef Marian Turowicz was born into a harsh

life. On 23rd April, 1908 he was born in “Zubir”, a village situated in Siberia Russia. His father worked on the Trans-Siberian railways for the Russian empire under the Tsar. Eventually, his family fled from Russia during the Bolshevik Revolution in 1917. At the tender age of 9, Wadysaw Turowicz came face to face with a broken land, famine, looting and ethnic cleansing while he fled to Poland. Such conditions, apparently, did not quell an interest he had harbored from a young age, which was aviation. This interest drove him to attain a degree in Aeronautical Engineering from Politechnika Warszawska (Warsaw University of Technology). In 1927, he went on to gain a Masters and later on, a PhD with honors in the same discipline. He also attained his Master's degree in Astro-Physics/ Dynamics from “Aeroklub Polski”. It was during this time, he was struck by the beautiful “Zofia”, his future wife, who was a renowned glider pilot. While at Warsaw University of Technology, Turowicz got an opportunity to study and work with notable Polish engineers of the field of aerospace engineering and technology. Later, he joined the Polish





**Air Commodore  
Władysław Turowicz**

**Above: Beaming eyes say it all - Wg Cdr Turowicz as the head of maintenance at RPAF Station, Drighroad.**

**Bottom: Wg Cdr Turowicz receiving the 2nd Prime Minister of Pakistan, Mr Khawaja Nazimuddin at an RPAF Station.**

(All Photos: PAF Archives)

Air Force as an aeronautical engineer and a test pilot. When WW-II broke out in Sep 1939, his unit was given orders to disable their aircraft (in order to prevent their use by the enemy), and to cross over to Romania, which at that time was a neutral country. There the allied forces interned them, and eventually filtered out most of them to allied countries in Europe. Turowicz along with others made his way to France, where they regrouped under the command of General Sikorski. At that time, Władysław Turowicz and Zofia were posted in separate units, and when France fell, they made their ways separately to Great Britain. Turowicz chose the long route through North Africa, and Zofia, disguised as sailor, sailed on a fishing boat across the English Channel. In England, the Poles served in the Polish Arm of the Royal Air Force (RAF), and contributed substantially to the air defence of Britain.

He was not accepted as a fighter pilot because of weak eyesight, but he was allowed to fly transport planes and was sometimes used as a test pilot as well. Besides, he was also working in maintenance and technical departments of RAF. The new world order that followed at the end of the war in 1945 meant that Poland remained firmly entrenched in the Soviet sphere of influence. Turowicz and majority of the Poles who fought with the Allied Forces decided not to risk returning to their country under communist regime. He took up a job at the British aircraft-

**Awards and laurels of Władysław Turowicz:**

Sitara-e-Pakistan	(1965)
Tamgha-e-Pakistan	(1967)
Sitara-e-Khidmat	(1967)
Sitara-e-Quaid-e-Azam	(1971)
Sitara-e-Imtiaz	(1972)
Abdus Salam Award in Aeronautical Engineering	(1978)
ICTP Award in Space Physics	(1979)



manufacturing set-up at Farnborough, but he always wanted to leave Britain owing to its depressing weather. Finally, his wish came true.

**'Pakistan', It Is**

Turowicz and Zofia were torn and confused after the war. They couldn't go back to Poland and nobody wanted them in the land they had helped save. Amidst such dismal circumstances, the Pakistan high commission in London announced a need for trained Pilots for its nascent air force. Turowicz, Zofia and more than 50 Polish aviators including pilots, aircraft technicians, and aeronautical engineers opted to join and all were given 3-year contracts with handsome salaries.

**Career with PAF**

"Poles came to help us when we were abandoned by everyone else." Gp Capt S. Ehtesham Naqvi of PAF remembers in a documentary on Polish aviators of PAF. The Poles could very possibly have felt the same about PAF. Of all the Polish pilots who had migrated to Pakistan, Władysław Turowicz showed the most promise. He was technically sound beyond most around him and this was prudently put to good use by PAF. He was initially based in the Technical Training Section (TTS) at Drigh Road and later commanded the No 102 Maintenance Unit. His wife, Zofia, served as a glider instructor for the Shaheen Air Cadets and played a key role in the flying training of budding flight cadets during these times. In 1950, when the contracts of the Polish personnel in RPAF expired, the majority of them moved to different countries, however, Turowicz and Zofia decided to stay as they felt very



comfortable in Pakistan. Apart from his professional immersion in the field of aeronautics, Turowicz other interests included 'Bridge' and "Shikar", both of which he was able to indulge to the full. Zofia, being the Masters in Mathematics and Physics begun teaching Mathematics and other science subjects at the Karachi American School.

Station Commander of PAF Chaklala. The base at that time was a technical/ maintenance base, comprising some propeller aircraft and consisted of 1200-1500 personnel including the large number of Poles. During the same period, King Faisal II of Iraq visited Chaklala along with General Ayub Khan and inspected the smartly tuned out aviators commanded by Wg Cdr Turowicz. From 1955 to 1957, Turowicz served as Station Commander PAF, Kohat. The base at that time housed the Recruits Training

**“Being at the helm of all maintenance activities during 1965 war, he made untiring efforts in keeping the PAF fleet up and running against the enemy. He ensured that aircraft readiness and turn-around time did not suffer by organising locally produced substitutes.”**

In 1952, Turowicz, was promoted to the rank of Wing Commander and became

by Wg Cdr Turowicz. From 1955 to 1957, Turowicz served as Station Commander PAF, Kohat. The base at that time housed the Recruits Training



**Above: Zofia Turowicz (3rd from left-sitting) and Wg Cdr Turowicz (2nd from right-sitting) along with station commander and shaheen air cadets at RPAF Drighroad.**

**Bottom: Zofia Turowicz imparting flying training to a Shaheen air cadets at RPAF station Drigh Road, Karachi.**

School and a technical School for Non Commissioned Officers of RPAF. In 1959, he was promoted to Gp Capt and became the Staff Maintenance officer at RPAF Headquarters at Mauripur. His foresightedness and meticulous planning on this appointment, helped the RPAF in reducing the ever growing accident rates especially on fighter aircraft. In 1960 he was promoted to Air

Cdre, and joined AHQ, as Assistant Chief of the Air Staff (Maintenance), one of the three ACsAS (Assistant Chief of Air Staff) reporting to the Air Force C-in-C (Commander-in-Chief).

Turowicz showed his true colours while holding this appointment. Being the expert in technical/maintenance domain, he formulated plans which subsequently became the reference guide for the modern PAF. Remaining on this appointment, he completely

reorganised the maintenance protocols in air force, taking direction of centralised management of all aircraft, supplies and equipment. Prior to that each squadron has its own maintenance procedures that lacked professionalism, standardisation and coherence. He also greatly emphasised on the training of the native PAF personnel and introduced the

**“Turowicz greatly emphasised on the training of the native PAF personnel and introduced the concept of indigenisation in PAF. These concepts of self-reliance and indigenisation later paved way in establishment of PAC Kamra.**

concept of indigenisation in PAF. These concepts of self-reliance and indigenisation later paved way in establishment of PAC Kamra.

During same time, the couple was blessed with one more daughter, Alicja and a son, Marek. Finally, in 1961, the family applied for the citizenship of Pakistan and decided to raise their four children in their new home land. All their children got schooling from Karachi, the city they loved the most.



In January, 1967 Air Cdre Turowicz retired from PAF.

Air Marshal Nur Khan, the then C-in-C of PAF paid rich tribute to the services rendered by him in the following note written to Air Cdre Turowicz: "On the eve of your retirement, I am writing this to express my warm appreciation of your dedicated services during your 18 years with Pakistan Air Force. You have been intimately associated with all aspects of maintenance activities of PAF from its very infancy. Your contributions in making the Maintenance branch as one of the most efficient and effective organisation of the PAF has been invaluable. The speed with which post-war re-equipment program of the PAF has been successfully accomplished is standing tribute to your dedication, hard work and technical skill. I am sure that you will always look back with pride on your association with this service."

Left: Air Cdre Turowicz, ACAS (Maintenance) during the inspection of RPAF Station Drighroad



Right: Air Cdre Turowicz (1st from right) along with fellow officers at PAF Base Chaklala.



And then came the real test of the nation, and its air force, the 1965 Indo-Pak War. During the grueling war, Pakistan suffered a setback when the US halted supply of combat aircraft spare parts to Pakistan. Not one to submit to circumstances, Turowicz supervised the production of spare parts in Pakistan that paralleled the ones made in America. He ensured that aircraft readiness and turn-around time did not suffer by organising locally produced substitutes. Being at the helm of all maintenance activities

during war, he made untiring efforts in keeping the PAF fleet up and running against the enemy. In recognition of his meritorious services during war, he was awarded with Sitara-e-Pakistan by President of Pakistan.

**“Zofia Turowicz served as a glider instructor for the Shaheen Air Cadets and played a key role in the flying training of budding flight cadets of RPAF during initial days.**



Contributions to Pakistan's Space Program

There was not a man to be seen on the streets. It was 7th June, 1962. People were glued to their radio sets and those who had them, their TVs. It was the eve of the launch of Rehbar-1, Pakistan's first unmanned solid-fuel sounding rocket. It was about to take its initial space flight from the Sonmiani Terminal Launch. The young nation hadn't had this much excitement for a

while. And there was cause for excitement and pride, as they waited with baited breath. Then, came the announcement. The launch was successful. A vein of merriment and pride could be felt through the nation, and with good cause. The rocket was developed in a joint venture between PAF and NASA, with PAF's team being led by Air Cdre Turowicz and Dr. Abdus Salam. In a period of 9 months, the Pakistani team, under the leadership of Air Cdre Turowicz and Dr. Abdus Salam, had trained in the US, procured equipment, selected the payloads, constructed the rocket range at Sonmiani and launched its first rocket successfully. Pakistan had secured its distinction as the third country in Asia and the tenth in the world to conduct successful spaceflight. NASA and the organization, after observing the launch, publicly hailed the space flight program as the beginning of "a program of continuous cooperation in space research of mutual interest."



Above Left: Turowicz, as a chief guest, at a prize distribution ceremony at RPAF station Chaklala.

Above Right: Turowicz, along with comrades at RPAF Station Peshawar.

Center Left: Turowicz, Zofia and kids in London UK

Center Right: Zofia Turowicz who always stood behind her husband through thick and thin

Bottom Left: Sqn Ldr Turowicz (3rd from left-sitting) at the culmination ceremony of jet conversion course at RPAF Station Mauripur



In 1966, Air Cdre Turowicz was appointed the Chief Scientist in Space and Upper Atmosphere Research Commission (SUPARCO), the national space agency of Pakistan. It was him and Dr. Abdus Salam who met with President Ayub Khan and convinced him about the

Right Above:  
Some valuable  
archives-  
Pakistani  
passport and  
Id card of  
SUPARCO of Air  
Cdre Turowicz

Bottom Left:  
Field Marshal  
Ayub Khan  
awarding  
Sitara-e-  
Pakistan  
to Air Cdre  
Turowicz at  
the investiture  
ceremony held  
at Rawalpindi

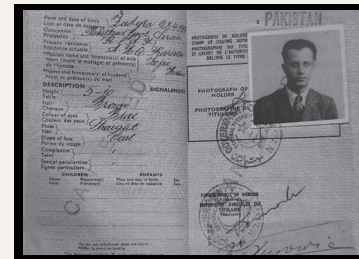
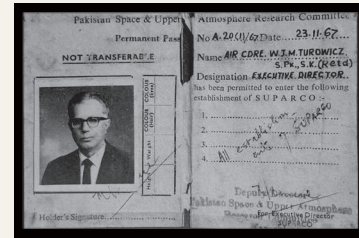
significance of investing in a space program. The President in turn sent them to the US to further meet with NASA Officials. The confidence and tact that Turowicz displayed in these meetings with NASA was instrumental in persuading the Nixon administration to invest in Pakistan's space program. Air Cdre Turowicz and Dr. Abdus Salam can be credited with the establishment of rocket fuel factories and rocket technology research institutes and labs in Pakistan.

In 1967 after formal retirement from PAF, Turowicz was appointed head of SUPARCO by President Ayub Khan. Air Cdre Turowicz justified the decision by several accomplishments to his name. After his appointment, oversaw the rapid development of Pakistan's own weather satellite, Rehbar – 2, conceiving and developing the design himself. The satellite was launched from Sonmiani Satellite Launch Centre, which Turowicz had recently upgraded, and carried a payload of 80 pounds. The Air



Right Page  
Bottom:  
Farewell to the  
Hero: Polish  
dignitary along  
with AVM  
Ahsan Rafique,  
AOC Southern  
Air Command,  
paying respect  
to the national  
hero.

Cdre also oversaw the development of a Launchpad Control System, a Flight-Test Control Command and an entire division for System Engineering in SUPARCO. The Doppler Radar (Islamabad Mission Control Center) and Islamabad Ionosphere Station in Quaid e Azam University were also his endeavors. In the late 1970s, Air Cdre Turowicz dedicated his time to advance academic development space and aeronautical studies. He orchestrated the construction of an engineering institution in SUPARCO. Turowicz and his students would conduct research and publish research papers and articles on topics such as space exploration, ballistic missiles and so on. It is safe to assume that without his contributions, Pakistan would not have achieved what it has achieved today in the field of Space and Missile technology. Air Cdre Turowicz, with his close friend, the enigmatic Dr. Abdus Salam, made a duo that the entire nation should be proud of, to this day.



In recognition of his exceptional contributions at SUPARCO, he was awarded with Sitara-e-Quaid-e-Azam (1971), Sitara-e-Imtiaz, (1972), Abdus Salam Award in Aeronautical Engineering (1978), ICTP Award in Space Physics (1979).

#### A True Patriot

After arriving in Pakistan, Turowicz never visited Poland. However, in mid 60s, he had to visit Poland for a while for the treatment of his back which was causing tremendous pain for years. As Poland at that time was under the control of communist regime, the famous intelligence agency "Sluzba Bezpieczestwa (SB)" got after him. Several agents made insidious attempts to indoctrinate him. It seemed that SB believed Turowicz, with his access and influence in high circles back in Pakistan would prove to be an invaluable asset to the organization. Once Turowicz was asked about whether he was approached to spy for these communist spy agencies. His firm reply was, "Yes, many times! But they are slimy worthless people. Why would I? I and my family belong to this country, Pakistan." Finally these intelligence agencies gave up on him. Recently declassified documents (as mentioned in

book 'Freedom under the Pakistani Sky' by Anna T. Pietraszek), reveals the statement of Turowicz on this issue, "I am primarily a Pakistani officer. In Pakistan I made my career, acquired the rank of Air Commodore and was awarded with highest distinctions. If I do anything unofficially, I would consider that disloyal to my authorities and my country. Thus, I cannot accept your proposition".

#### Death and Legacy

In his last years, Turowicz suffered from a come-back of a contusion connected with backbone injury incurred in a motorcycle accident in his young age before World War II. After retirement, he developed problems with movement and physical activeness. He was looked after well by his wife and daughter Anna during his last days. Finally, after long illness Władysław Turowicz died in Karachi on 8th January, 1980. The nation had lost one of most technically adept minds. He was buried with full military protocol and honor in the Christian cemetery (famously known as 'Gora Kabristan') at Karachi. The ceremony was attended by the Consul-General of Poland Mr. Kazimierz Maurer and high level Pakistani military and civilian personnel from all important spheres. His name is engraved on a memorial in PAF

Museum Karachi along with other Polish scientists that served the country. Space Complex (SUPARCO) in Lahore also has erected a monument in honor of him.

Turowicz left behind four children. Anna, Magda, Alicja and a son, Maerk. Two of his daughters got married to Pakistanis and one to a Physicist from Bangladesh. His son, Maerk had initial schooling from Karachi, later did Masters in Oceanography and Chemical engineering and got settled in England.

After World War II, Turowicz could easily have returned home. Instead the Polish officer found his calling in Pakistan, a country that was scraping together officers to build an effective air force. Not only he helped PAF in its early years but was also instrumental in developing the Pakistans's space program. Turowicz's commitment was total and for that he was honored with the highest decorations Pakistan could award him. A legend in his own time, a war hero, his biography reads more like fiction than fact - leaving a lasting impression in the history of his homeland that has not forgotten him.



"Pakistani nation and especially Pakistan Air Force will never forget the key role played by Air Cdre Turowicz in the development, modernisation and technical maintenance of PAF in its formative years. We shall always remember him as the hero of PAF and will always remain indebted to his selfless contributions and utmost devotion for this great service": Air Chief Marshal Mujahid Anwar Khan

Władysław Turowicz and his wife Zofia Turowicz, two prominent Poles of noble characters and strong personalities, hard-working professionals with great of sense of humor, are the key figures in cementing the friendly and cordial relations between the two great nations. We are honored and glad that Pakistan and especially PAF held them in great esteem and respect." : Piotr Opalinski-Ambassador of Poland to Pakistan

The grave is covered by white plaque with an engraved verse written in Polish by the 19th century national Poet Adam Mickiewicz :



" The beam of light  
cast out by the sun,  
Playing on noisy  
abyss of the sea,  
Will not sink but  
into a rainbow  
divide  
And to the sky,  
its outset, will flee. "

# Saiful Azam ACE of ACES

“Through this write up, the author, Air Cdre Muhammad Ali honours the sacrifices and heroism of late Group Captain Saiful Azam. His experiences in the 1965 Pakistan-India war and the Israel-Arab conflict two years later, read like chapters of a thrilling book. His stories as a pilot are more than exceptional in every way. His career as an aviator gives an insight into the depth and character of Pakistan Air Force and its brave men in blue.”



Above: Saiful Azam downs an IAF Gnat during 1965 war.

Below: Flying 'Hunter', Saiful Azam claims victory over Israeli jet. (Hussaini Paintings)



There were many amazing fighter pilots in the aerial battles that Pakistan Air Force fought. The most known is MM Alam, who is credited with five kills on a single mission. Maybe not a famous equal to MM Alam, probably to a lot of readers, but perhaps as big as Alam, was another PAF fighter pilot, Saiful Azam. He has the unique distinction of having aerial kills against the air forces of two different countries while serving under four different ones, Pakistan, Jordan, Iraq and Bangladesh. To-date, he remains the highest shooter of Israeli aircraft in the history of dog fights. Among the great fighter pilots that Pakistan Air Force produced, Saiful Azam was amidst the few who became legends.

Saiful Azam was born in Pabna District, East Bengal in 1941. At the time of partition, his family moved east to an area that became part of predominantly Muslim East Pakistan. In 1955, he went to West Pakistan and attended school until 1958, when he joined the PAF school Sargodha. Saiful Azam took to flying naturally. He was such an exceptional pilot that by the time he was completing his training on

the tricky Harward, his instructors knew Saiful Azam was destined to become an exceptional fighter pilot, top of the line. Soon after graduating in 1960, the young Pilot Officer was sent to Luke Air Force Base, Arizona, USA, for an Advanced Fighter Course. During his training there, he flew T-33 and F-86 Sabres and earned the distinct title of 'Top Gun' from the United States Air Force. After returning to Pakistan, he was posted to the elite No 14 Sqn as Operational Fighter Pilot. During his attachment with the No 14 Sqn, Saiful Azam was admired and respected for his professionalism, soft nature and dedication to service.

When war broke out with India in 1965, Saiful Azam was flying the

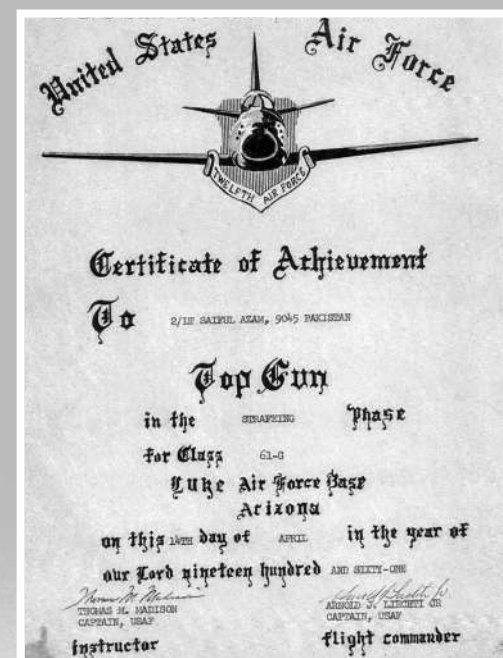
designed F-86, an aircraft that gave pilots the feeling of being free and to do as they pleased. On one combat sortie, the Indian Air Force picked a wrong game day to jump his four-ship formation. In the ensuing fight, Saiful Azam shot down one of the two attackers flying the Gnat, and spared the life of the other, after he surrendered. For defending his country, he was awarded Pakistan's third-highest military award, the Sitara-e-Jurat, or Star of Courage. To Saiful Azam, it was just him, just doing his job- and just the beginning. By the end of 1966, Saiful Azam headed on deputation for some sun and fun to the Middle East, where he flew Hawker Hunters with the No 1 Sqn of the Royal Jordanian Air Force. When the Arab-Israeli war broke out in 1967, Saiful Azam again distinguished himself in the air. He shot down one Israeli jet



Top: Sqn Ldr Saiful Azam along with Jordanian air force officer during his deputation to Royal Jordanian air force. (Photo: PAF Archives)

Right: USAF 'Top Gun' certificate

Bottom: Sqn Ldr Saiful Azam (3rd from right-standing) along with fighter pilots at PAF Base Sargodha. (Photo: PAF Archives)



**SAIFUL AZAM- GALLANTRY AWARDS**

▪ **Sitara-e-Jurat**  
Government of Pakistan

▪ **Wisam-al-Istlaqlal**  
King of Jordan

▪ **Nawt-al-Shuja'a**  
Iraq's Medal of Bravery

“ In the gathering of Eagles-2000 in the USA a list of 22 aviators of all time was published - ranging from World War I to the present day. Saiful Azam was the only fighter pilot from the sub-continent who was selected and honoured as the 13<sup>th</sup> best aviator in the world. ”



Wasam-al-Istlaqlal by Jordan



and sent the other trailing smoke. But on his greatest day, on June 7, 1967, Azam, who was flying an Iraqi Hunter this time, downed two Israeli intruders.

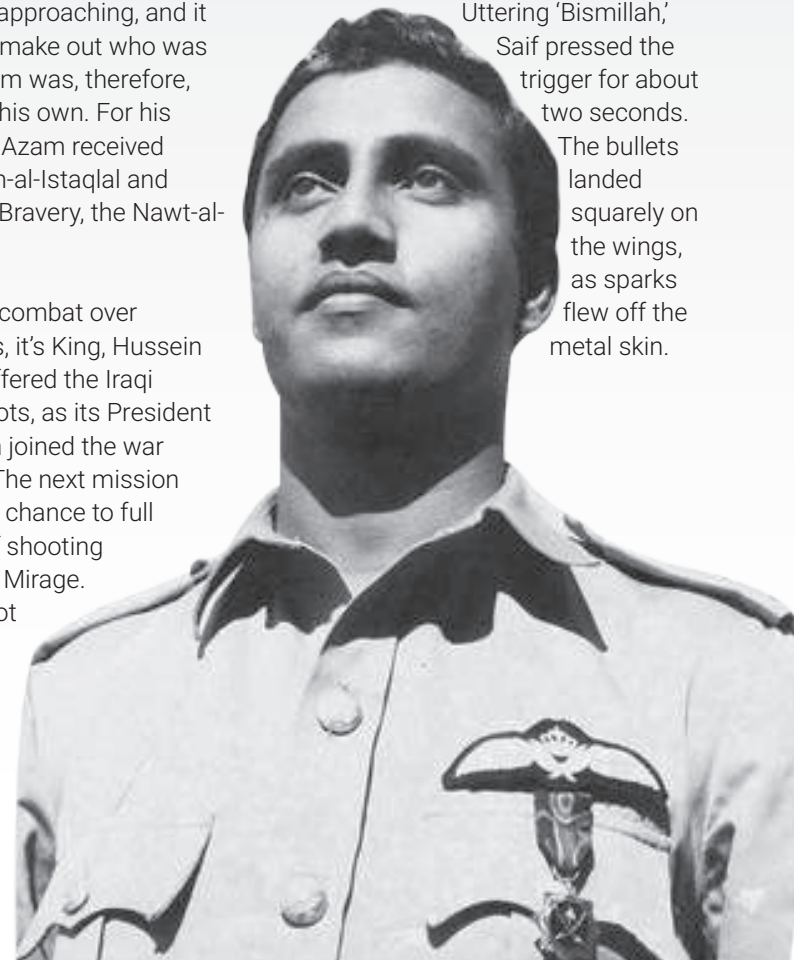
Saiful Azam flew offensively often risking and attacking, even if circumstances were unfavourable. One of his greatest skills was marksmanship in aerial gunnery. The day he gunned down his first Israeli victim while flying for the No 1 Sqn in RJAF, he did it without assistance. The ground controller had declared the sudden blizzard of enemy aircraft approaching, and it was difficult to make out who was who. Saiful Azam was, therefore, asked to be on his own. For his services, Saiful Azam received Jordan's Wisam-al-Istlaqlal and Iraq's Medal of Bravery, the Nawt-al-Shuja'a.

After the aerial combat over Jordanian skies, it's King, Hussein bin Tatal had offered the Iraqi government pilots, as its President Abd Al-Rehman joined the war against Israel. The next mission offered him the chance to full fill his dream of shooting down an Israeli Mirage. Former PAF Pilot and aviation blogger Air Commodore, Kaiser Tufail, finds the words

in his article dedicated to the late veteran, 'A Sword for Hussein' and neatly describes the dogfight over Iraqi airspace.

“Reversing his turn, Saiful Azam noticed one of the Mirages still turning right, apparently having lost sight of the Hunters. Saiful Azam managed to turn inside the Mirage, and started to catch up fast. At the extreme limits of range, the Mirage could not light up its fuel-guzzling afterburner, or else it could have easily out-run the subsonic Hunter. In the event, the Mirage had to face the Hunter's lethal cannon.

Uttering 'Bismillah,' Saif pressed the trigger for about two seconds. The bullets landed squarely on the wings, as sparks flew off the metal skin.



Suddenly, the Mirage was engulfed in a big ball of fire. The pilot, Capt Dror, ejected in full view of the Base personnel watching from the ground.”

Immediately pulling a 'split S', and airspeed alive, Saiful Azam, was behind his second target, the Vautour. Chasing the Vautour, just 200 feet behind, too close for the safety of his own aircraft were the much larger Vautour to explode like his previous victim, he decided not to miss the chance. “Saif opened fire and after three bursts of his cannon, saw parts of the aircraft fly off. His own aircraft juddered as if hit by something. Saif had to look around to be sure he was not being shot at.”

After 1971, Saiful Azam served the Bangladesh Air Force until his retirement in 1980, following which he was chairman of the Civil Aviation Authorities of Bangladesh and a member of parliament from 1991–96. According to Arab News, around three years ago, Saiful Azam was diagnosed with Parkinson's disease. After his death on June 14, 2020, tributes poured in from around the world, including a call from Jordan's Prince Hassan bin Talal, “to convey his condolences on behalf of all Jordanians.” His death has an impact on Pakistan Air Force today. To have Saiful Azam on the team was huge to PAF pilots looking for inspiration. The Chief of the Pakistan Air Force, Air Chief Marshal Mujahid Anwar Khan, paid glowing tributes to Saiful Azam



in a statement. “The late Group Captain Saif ul Azam (standing-3rd from left) along with comrades at an unidentified air base in Iraq. (Photo: Online)

your dreams and taking chances to accomplish what no one else has done before. Aviation is about courage and confidence. Being a PAF pilot is about being part of something bigger than yourself. He broke the glass ceiling and more importantly, had the chance to do what he loved, to fly with the best, and that is not hard to say for Pakistan Air Force fliers.

We all have value and a story to share. History recognizes Saiful Azam's astonishing achievements in the air. History will remember him as a fair and brave opponent who logged hundreds of hours of combat time, whose professionalism should be admired by all nationalities and generations of fighter pilots. “In the aviation world, he is an international hero who was recognized with high appreciation,” said Air Vice Marshal M Mafidur Rahman, the current civil aviation chairman in Bangladesh. “He is our national pride as a fighter in the sky,” he told the Arab News in an interview.

The late veteran's wife Nishat Ara said there couldn't be a more accurate description of her late husband. “The sky was his home; he was the happiest when he was flying,” she said. But while the world knew him as an ace pilot, Nishat Ara said, much more would be revealed about the man in an upcoming biography.

“Saiful Azam was many things to many people, but through this book, the best part of his personality will shine through,” she said adding, “That he was always a friend first.”.



Top Left: President General Ayub Khan awarding Sitara-e-Jurat to Flt Lt Saif ul Azam for downing an IAF jet during 1965 war. (Photo: PAF Archives)

Top Right: Flt Lt Saif ul Azam (3rd from right) with fellow fighter pilots at PAF Sargodha. (Photo: PAF Archives)

Bottom: Final Salute- Saif ul Azam leaves for final abode. (Photo: BAF)

## PAF C-130 AIRCRAFT CARRYING ZAAIREEN FROM DALBANDIN LANDS AT SKARDU

**Islamabad 04 April, 2020:** On the instructions of Government of Pakistan, PAF is undertaking relief operations in the fight against COVID-19. In this regard, a PAF C-130 aircraft carrying zaaireen from Dalbandin, landed at Skardu airport. The zaaireen were kept in the makeshift arrangements at Taftan, the bordering town between Pakistan and Iran. They acknowledged the concerted efforts of the government for giving best possible facilities at such a far off place. They also thanked PAF for arranging this special sortie for the people of Gilgit Baltistan. PAF's Air Transport fleet is actively involved in carrying out relief efforts in the wake of COVID-19 pandemic and has airlifted tons of relief goods and medical equipment from the neighbouring country, China.



## AIR CHIEF EXPRESSES GRIEF OVER THE TRAGIC AIR CRASH

**13 April, 2020:** Air Chief Marshal Mujahid Anwar Khan, Chief of the Air Staff, Pakistan Air Force has expressed grief over the tragic air crash of Army Aviation Mushshak trainer aircraft near Gujrat, today. The Air Chief prayed for the eternal bliss of the martyred souls, who embraced Shahdat in the line of duty. He also expressed solidarity with the bereaved families to bear this irreparable loss with fortitude.



## GUARDING AERIAL FRONTIERS OF PAKISTAN AND MEASURING UP TO NATION'S EXPECTATIONS ARE SACRED RESPONSIBILITIES: AIR CHIEF

**16 April, 2020:** "Guarding aerial frontiers of Pakistan and measuring up to nation's expectations are sacred responsibilities. Put in your best to befittingly live up to the trust that the nation has reposed in you", said Air Chief Marshal Mujahid Anwar Khan, Chief of the Air Staff, Pakistan Air Force, while addressing the graduation parade at PAF Academy, Asghar Khan today. He was the chief guest at the graduation ceremony of 143 GD (P), 89 Engineering, 99 Air Defence, 23 Admin & Special Duties, 9 Navigation and 7 Logistics courses. Owing to COVID-19 threat, guests were not invited for the ceremony to ensure precautionary measures related to prevalent situation in letter and spirit.

has implemented all measures in line with the guidelines by Government of Pakistan to preserve force readiness and ensure safety of personnel. He also assured the nation that PAF remains committed and prepared to respond, when called for. The Air Chief also reiterated that we stand by our Kashmiri brethren in their just struggle for right to self determination.

A total of 115 Aviation Cadets graduated at the occasion. The Chief Guest awarded branch insignias to the graduating officers and also gave away trophies to the distinction holders.

Chief of the Air Staff Trophy for Best Performance in Flying Training and the coveted Sword of Honour for Overall Best Performance in College of Flying Training was awarded to Aviation Cadet Academy Under Officer Haider Zameer Afridi; whereas Aviation Cadet Sergeant Muhammad Kamran Arif was awarded Chief of the Air Staff Trophy for Best Performance in Engineering and the coveted Sword of Honour for Overall Best Performance in College of Aeronautical Engineering. Trophy for Overall Best Performance in 99 Air Defence Course was awarded to Aviation Cadet Sergeant Tanvir Akbar; while Chairman Joint Chiefs of Staff Committee Trophy for Best Performance in General Service Training was awarded to Aviation Cadet Squadron Under Officer Ahsan Qureshi. The Spirit formation of PAF Academy aerobatics team Sherdils also presented fly past over the venue.



## A PAF C-130 AIRCRAFT CARRYING MEDICAL EQUIPMENT FOR THE PEOPLE OF BALUCHISTAN LANDS AT QUETTA

**Islamabad 06 April, 2020:** A PAF C-130 aircraft carrying medical equipment and relief goods for the people of Baluchistan landed at PAF Base, Samunli (Quetta) today. The No 6 Squadron C-130 took off from PAF Base Nur Khan early in the morning for the relief mission. The aircraft airlifted approximately 11000 pounds of medical equipment including N95 masks, protective gear, gloves, face masks, testing kits and medicines in the sortie. PAF is actively taking part in the relief operations in the fight against COVID-19 and its air transport fleet is playing a pivotal role in airlift of medical equipment to every nook and corner of the country.



# PAF C-130 AIRCRAFT AIRLIFTS PIPER BRAVE SPRAY AIRCRAFT FROM TURKEY FOR LOCUST CONTROL IN PAKISTAN

**Islamabad 06 May, 2020:** To augment Pakistan's locust control efforts, Turkish government has offered its expertise to the Government of Pakistan. In this regard, on the special instructions of Pakistan Government, a PAF C-130 aircraft arrived at Adana, Turkey to airlift purpose built Piper Brave spray aircraft from the brotherly country. The aircraft, along with four crew members would be landing in Pakistan today, where it would be assembled before its departure for the pest infected areas in the

country. This aircraft would be used to fight the locust onslaught on various crops and cultivable lands across the country, especially Sindh and Punjab. Turkey and Pakistan are all weather friends and this gesture would help improve a comprehensive pest control system to overcome the locust plague. PAF transport fleet has a rich history of serving the nation in various natural calamities and it has been in the forefront of providing air transport to the relief efforts in the country.



# PAKISTAN'S LEGENDARY FIGHTER PILOT SAIFUL AZAM PASSES AWAY

ISLAMABAD - Chief of the Air Staff of Pakistan Air Force (PAF) Air Chief Marshal Mujahid Anwar Khan on Monday paid glowing tribute to Group Captain (Retd) Saif-ul-Azam, a war veteran of 1965 Indo-Pak war, who breathed his last in Bangladesh after prolonged illness. The legendary pilot who was once titled "Living Eagle" breathed his last in Bangladesh capital Dhaka on Sunday. The chief of the air staff expressed heartfelt grief on the sad demise of the "great war veteran." While paying rich tributes to Group Captain (Retd) Saif-ul-Azam, the air chief acknowledged his heroic deeds during the 1965 Indo-Pak and 1967 Arab-Israel wars, PAF said in

a statement. He further added that he was an exceptional fighter pilot who would always be remembered for his valour and professionalism. Group Captain (retd) Saif-ul-Azam, Sitara-i-Jurrah, was born in Pabna District, East Bengal in 1941. He was commissioned as a fighter Pilot in October, 1960. During the 1965 War, he served in No. 17 Squadron at PAF Base, Sargodha. Apart from inflicting heavy damage to Indian forces in 12 ground-attack missions, Azam also had to his credit for downing one Indian Air Force (IAF) aircraft. For his valour and devotion to duty in 1965 war,

he was awarded with Sitara-e-Jurrah

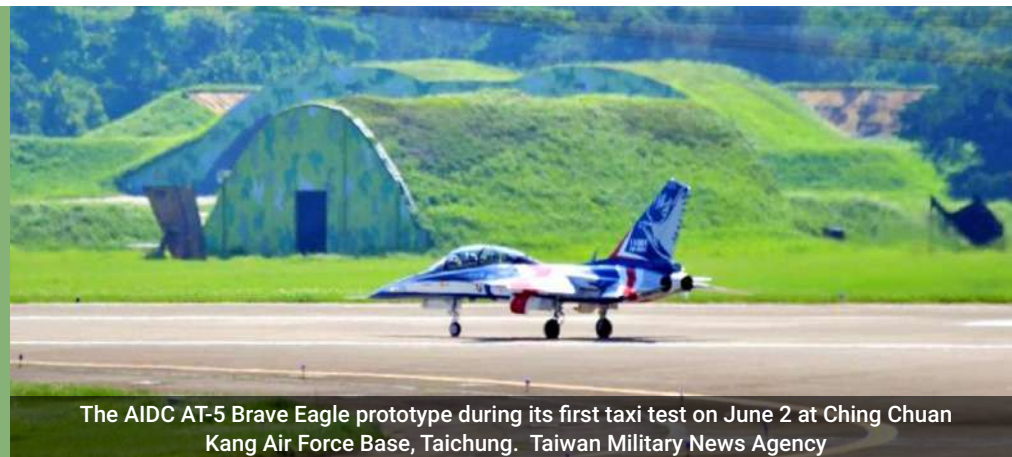




## First Flight Date Set for Taiwan's Brave Eagle Advanced Jet Trainer

TAIWAN'S FIRST prototype of the indigenously developed advanced jet trainer, the Aerospace Industrial Development Corp (AIDC, local Chinese name Han Xiang) XAT-5 (AT-5) Yong Ying (Brave Eagle), is scheduled to make its maiden flight during current month according to a report in the country's Apple Daily on June 8.

The first of two flying prototypes, A1, carried out its first taxi test on June 2 at Ching Chuan Kang Air Force Base, Taichung. Along with the second prototype, A2, it has been undertaking progressively faster trials and is now completing high-speed runway testing in advance of its first sortie. In addition, two static structural test airframes, T1 and -2, are currently being statically tested in the workshops of the Institute of Aeronautics and Astronautics, Chinese Academy of Sciences, which has been a co-developer of the new trainer. The first stage of static testing has already been completed.



The AIDC AT-5 Brave Eagle prototype during its first taxi test on June 2 at Ching Chuan Kang Air Force Base, Taichung. Taiwan Military News Agency

## IAI Signs Special Mission Aircraft Contract with Major European Country



ISRAEL AEROSPACE Industries (IAI) has received a \$350 Million Special Mission Aircraft related contract from an unspecified major European country. The contract, announced by the Israeli company on June 8, will be executed by IAI's ELTA Systems, which already has considerable expertise in the Special Mission Aircraft domain.

IAI has previously delivered Special Mission Aircraft to the Israel Defence Forces (IDF) and numerous countries worldwide. IAI is one of a number of companies which have these technology capabilities in-house. IAI says that it has achieved a major breakthrough in Special Mission Aircraft due to advanced sensor miniaturization technology coupled with Artificial Intelligence (AI) and Machine Learning software applications, allowing high performance business jets to be used as Special Mission Aircraft. Previously, most of the Special Mission Aircraft in the world were based on converted larger cargo or passenger planes.

• Above: Israeli Air Force/122 Squadron Gulfstream G550 Nachshon Eitam conformal airborne early warning (CAEW) aircraft 537 is one of two of these special mission aircraft converted by IAI and operated by The Dakota Squadron at Nevatim Air Base. The type of special mission aircraft involved in today's contract was not revealed. (IAI)

## First Army Air Corps AH-64E Flown to Redstone Arsenal for Testing

A MAJOR step forward in the UK Army Air Corps AH-64E Apache Guardian programme was achieved on May 19, when the first helicopter (ZM700) was flown from the Boeing production site in Mesa, Arizona, to Redstone Arsenal, Alabama, for testing to begin. The helicopter was flown by AAC Major Simon Beattie and US Army exchange officer CW4 Woelke. It is expected to arrive in the UK around the end of this year.

All 50 of the AAC's remaining WAH-64D Apache AH1s are to be returned to Boeing, where they will be remanufactured to AH-64E standard. Although, this will involve new airframes, engines, rotor blades and avionics, numerous high-value components recovered from the existing legacy Apache AH1s will also be incorporated, hence the need to ship the old airframes back to the manufacturer for stripping out. The new AAC AH-64Es have been allocated serials ZM700-ZM749 inclusive.



Army Air Corps Major Simon Beattie (right) and US Army exchange officer CW4 Woelke (left) preparing to fly the first UK AH-64E Apache from the Boeing factory in Mesa, Arizona, to Redstone Arsenal, Alabama, on May 19 to begin testing. British Army

## Ten Refurbished Helicopters Redelivered to Iranian Armed Forces

A CEREMONY was held on June 7 in Tehran to formally return ten helicopters to service with the Iranian Armed Forces after they had been extensively overhauled and refurbished by the Iran Helicopter Support and Renewal Company (IHSRC) in recent months. They comprised Islamic Republic of Iran Air Force (IRIAF) Meridionali-Vertol CH-47C Chinook 5-9301; Islamic Republic of Iran Naval Aviation Agusta-Sikorsky SH-3D Sea King 8-2303; Islamic Republic of Iran Army Aviation (IRIAA) Agusta-Bell AB206A JetRanger 2-4138; IRIAA Agusta-Bell 205A 6-4366 plus two more, one possibly 6-4307; Islamic Republic of Iran Police Aviation (IRIPA) Mi-171Sh 1805, two unidentified IRIPA Bell 214As and two other unidentified helicopters. The Bell 205 was also reported as one of the types involved, which presumably accounts for at least one of the two unidentified examples, although it is unknown to which service it is allocated as the type is operated by the IRIAF, IRIAA and IRIPA.



Islamic Republic of Iran Naval Aviation Agusta-Sikorsky SH-3D Sea King 8-2303 being rolled-out on June 7 in Tehran during the hand-over of ten newly refurbished helicopters of the Iranian Armed Forces.



### Austrian C-130K Avionics Upgrade Contract Awarded to Marshall

Marshall Aerospace and Defence Group has been awarded a multi-million-pound contract by the Austrian Air Force to upgrade the navigation systems on its fleet of three former Royal Air Force Lockheed C-130K Hercules C1s. Under the terms of the contract, announced on June 4, Marshall ADG will now design and update the Electronic Flight Instrument System displays, Standby Instrument and Flight Management System across the fleet. The work follows on from the Night Vision System upgrade modification of the Flight Management System to these aircraft carried out by Marshall ADG in 2017. Marshall ADG will begin the design phase of the new project through the middle of this year and complete the embodiment of the modification

on the fleet as the aircraft are inducted into Marshall's Cambridge facility for scheduled maintenance. The Austrian Air Force purchased the three aircraft from the UK Ministry of Defence in 2003 when the Royal Air Force started the transition of their fleet to C-130Js. Marshall has been supporting these aircraft ever since, providing depth maintenance, engineering and logistics support. They are operated by the Lufttransportstaffel (LuTSta – Air Transport Squadron) at Linz/Hörsching. A fourth ex-RAF aircraft was acquired purely for spares use and after being flown into Linz/Hörsching on December 10, 2015, it was immediately placed in storage in a hangar there, where it still remains.

- One of the Austrian Air Force C-130Ks undergoing overhaul with Marshall ADG at its Cambridge facility.
- Marshall ADG

## Eighth Upgraded Brazilian Air Force A-1M Delivered



Brazilian Air Force A-1M 5520 was one of the earlier A-1As to be upgraded to this standard. An eighth example has now been delivered. FAB/Cb V Santos

EMBRAER HAS delivered the eighth upgraded Força Aérea Brasileira (FAB – Brazilian Air Force) AMX A-1M. It was delivered in March, but the hand over was not announced at the time and only revealed on June 1 when Embraer, which carries out the modernisation work on the aircraft, announced its first quarter earnings results.

It had originally been planned to carry out a mid-life upgrade on all of the 55 surviving FAB single-seat A-1A and two-seat A-1B aircraft to bring them to A-1M and A-1BM standard, respectively. However, the programme was eventually cut back to include just 14 aircraft, comprising eleven A-1As and three A-1Bs. To date it is believed that only one of the three A-1Bs has been converted to an A-1BM, while delivery of the eighth A-1M leaves just three more A-1As to be upgraded. Known conversions identified comprise A-1Ms 5506, 5507, 5520, 5525 and 5526, plus prototype 5530, together with A-1BM 5652.

A Bombardier Challenger 650, two of which are being acquired by the Royal Canadian Air Force. Canadian DND



## Myasishchev Begins Russian L-39 Upgrade



The first Russian Air Force Aero L-39 Albatros to be upgraded by Myasishchev using entirely Russian components. UAC

RUSSIA'S UNITED Aircraft Corporation (UAC) has revealed that its Myasishchev subsidiary has begun work on upgrading the Russian Air Force L-39 Albatros fleet. UAC announced on June 4 that the first aircraft has already been completed and will be transferred to the customer for flight tests. The modernisation includes installation of new avionics that are completely of Russian manufacture and replacing obsolescent components. The aircraft are also being resprayed with new domestic enamels that have

high weather resistance, strength and elasticity. The L-39 remains the primary jet trainer of the Russian Air Force. Myasishchev has been responsible for providing design support for the operation and repair of these aircraft since 1997. As part of this, Myasishchev is working to increase the service life of the aircraft and its components, including replacing them with equivalent Russian-made components, repairing and improving them.

## Canada Replaces Two 30-year-old RCAF Challengers

CANADA IS to replace two ageing Royal Canadian Air Force (RCAF) Challenger 601 (CC-144B) utility aircraft with a pair of new Bombardier Challenger 650s. The decision to buy the aircraft was announced on June 6 by the Canadian Government and will allow for continuation of mission critical roles. The Government stated that the retiring aircraft, that entered service in the 1980s, fall short of operational requirements and are nearly obsolete due to new rules in the United States and Europe that will restrict their ability to fly internationally before the end of this year. The replacement ensures the RCAF can continue to operate a modern and flexible utility flight service fleet that serves a variety of roles – including reconnaissance and liaison missions with international partners, and the speedy deployment of specialized capabilities and expertise, including the Disaster Assistance Response Team.



A company rendering of the F-16C/D Block 70/72 or F-16V configuration. Lockheed Martin

## Bulgarian Air Force Pilots to Begin F-16 Block 70 Conversion Training

A BULGARIAN Army press release on June 6 revealed that four Bulgarian Air force pilots will shortly depart for the US to begin their conversion training on the Lockheed Martin F-16 Block 70/F-16V. They were given a formal send-off ceremony the previous day by Defence Minister Krassimir Karakachanov and Chief of Defence Admiral Emil Eftimov, who wished them success.

The first four pilots are Major Stoyan Petkov, Captain Alexander Velinov, Captain Todor Todorov and Senior Lieutenant Simeon Georgiev from Graf Ignatievo Air Base, which houses the MiG-29 Fulcrums that the F-16s will replace. Initially, they will go to the US Air Force Language Training Center at Lackland Air Force Base, Texas, to

undertake a nine-week specialised English language course before around three years and four months of flying training, first involving about 12 months on the T-6 Texan and T-38 Talon before finally moving on to the F-16.

US State Department approval for Bulgaria's purchase of eight F-16C/D Block 70/72s, at an estimated cost of \$1.673 billion, had been announced by the US Defence Security Cooperation Agency on June 3, 2019. Although a Presidential veto on July 23, 2019, put the deal in doubt, this was overturned by Parliament three days later, allowing the acquisition to go ahead. Lockheed Martin was awarded a \$512 million production contract for the eight aircraft on April 2, 2020, with contract

completion anticipated by January 31, 2027. First delivery is scheduled for 2022, with the remainder following in 2023 and 2024.

The purchase was to comprise six single-seat F-16Cs and two dual-seat F-16Ds, but it is believed the final deal was for all eight to be single-seat aircraft. The ultimate requirement is for 16, but the high cost has led to only eight being acquired and it is unclear when or if funds will be available to purchase a second batch. About 14 MiG-29s remain in the inventory, although only a few are airworthy, having served the Bulgarian Air Force since 1989. They are becoming increasingly costly to maintain, but at least some will have to remain in service until a second batch of F-16s can be purchased.



## New Zealand Confirms it will Purchase five C-130J-30s

NEW ZEALAND'S Coalition Government has confirmed that five Lockheed Martin C-130J-30 Super Hercules will be purchased to replace the existing fleet of five C-130Hs operated by 40 Squadron at RNZAF Base Auckland/ Whenuapai Airfield. The decision was announced on June 5 by Defence Minister Ron Mark. The Defence Minister had announced on June 11 last year that the type had been selected by the New Zealand Cabinet as the preferred option for the requirement. Mark said today that "Along with the new fleet, the \$1.521

billion project will deliver a full mission flight simulator and other supporting infrastructure. This fleet will ensure the Defence Force can continue to support New Zealand's community resilience, our national security, our contribution to our Pacific neighbours and the wider global community. This decision ensures tactical airlift will remain available to undertake operations in New Zealand's immediate region, as well as support our interests in Antarctica, often in support of other government agencies."

Royal New Zealand Air Force (RNZAF) C-130H Hercules NZ7002 departing from RNZAF Base Auckland for Vanuatu carrying a civilian Robinson R66 helicopter for cyclone relief operations on April 11, 2020. The RNZAF's veteran C-130Hs are to be replaced by new C-130J-30s. RNZAF

## Montenegrin Air Force Orders Two Bell 505s

MONTENEGRO'S MINISTRY of Defence announced on June 5 that it has signed a government-to-government contract facilitated through the Canadian Commercial Corporation (CCC) for the supply of two Bell 505 Jet Ranger X helicopters for



operation by the Air Force of the Montenegrin Army. Under the terms of the contract, CCC will provide training in France for three Vazduhoplovstvo i protivvazdušna odbrana (V i PVO – Montenegrin Air Force) pilots, while eight technicians will be trained at the Bell Training Academy, in Fort Worth, Texas.

Bell 505 Jet Ranger X F-HJRX flies in formation with Montenegrin Air Force Bell 412EPI XHB033 during a demonstration flight from Podgorica-Gulobovci on April 9, 2020. An order for two Bell 505s for Montenegro was announced today. Montenegro MOD

**Note:** International News Bulletin is courtesy of Warnesy World



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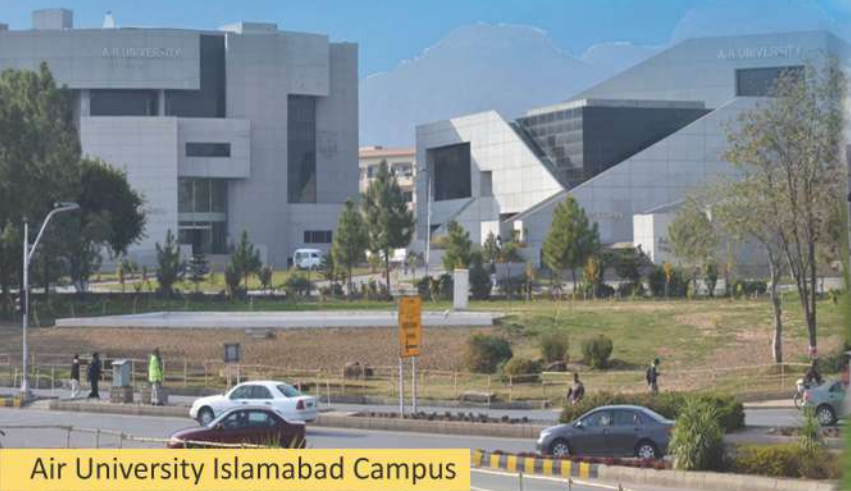
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