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Balakot in Pakistan's Khyber Pakhtunkhwa region was relatively unknown to anyone outside the country until February last year. The town had been destroyed during the 2005 earthquake but had since been rebuilt, only to be thrust back into the headlines due to an air battle between Indian and Pakistani air forces. That conflict saw the Indian Air Force (IAF) taught a few tactical lessons by its Pakistan Air Force (PAF) counterparts. The biggest? Never underestimate your opponent.

Given the past two wars in 1965 and 1971, as well as several other skirmishes between the two countries since Pakistan gained independence in 1948, it could be argued that the IAF should have known better. The IAF outnumbers the PAF in every domain and yet its performance against its old foe on February 26-27, 2019, highlighted some deficiencies. The outcome tarnished the

reputation of the IAF commander at the time, Air Chief Marshal Birender Singh Dhanoa. He had emerged from the 1999 Kargil War with merit, after successfully leading a MiG-21 unit, No 17 Squadron 'Golden Arrows'. He never forgot his old squadron, though. Before retiring on September 30 last year, he resurrected No 17 Squadron at Ambala Air Force Station (AFS) in readiness for the first in-country Rafale deliveries next year.

Indian attack

The background to the Balakot air battle were the deaths of 40 Indian police officers when a Kashmiri suicide bomber packed his car with explosives and crashed into Pulwama police station in Indian-administered Jammu and Kashmir, on February 14, 2019. Responsibility for the bombing was claimed by a Pakistan-based Islamist militant group. The incident was widely

condemned amid Indian calls for retribution. The attack coincided with an Indian general election, and an escalation against Pakistan was sure to win favour with many voters.

It wasn't surprising that Indian hostilities towards its neighbour grew and the IAF began regularly testing the PAF's air defences. Then, in the very early hours of February 26, six Mirage 2000s from No 9 Squadron 'Wolfpack', each loaded with a Rafael SPICE 2000 standoff weapon, left Gwalior AFS, around 220 miles (350km) south of Delhi. Their mission was to strike an alleged terrorist training camp. According to Pakistan, the target was in fact a madrassa (religious seminary), where young boys went to learn Islamic teachings, in the village of Jaba near Balakot. According to Pakistan, Indian intelligence was confused about the purpose of the seminary.

Gwalior is home to the IAF's 40 Wing and two Mirage 2000 units,

Nos 7 and 9 Squadrons. Also located there is the IAF's Tactics and Air Combat Development Establishment (TACDE), which was responsible for developing and writing the tactics the Mirages would employ that night. The French jets were escorted by several Su-30MKIs from No 15 Squadron 'Flying Lances' for the two-hour mission to Balakot. At least one Il-78MKI tanker supported them, while two ERJ145 Netra airborne early warning and control (AEW&C) aircraft provided surveillance. On the opposite side of the border, one of the PAF's Erieye AEW&C aircraft was peering deep into Indian airspace and detected the strike package as it edged closer to Pakistan.

As Pakistani air defences monitored their enemy's moves that night, personnel at the PAF's Air Headquarters (AHQ), supervised by the operations commander Air Marshal Haseeb Paracha, were plotting their next ▶

Swift Retort

one year on

One year after Pakistan and India almost went to war, **Alan Warnes** provides a Pakistan Air Force perspective on how events unfolded in the air over Kashmir.



Above: A No 29 Squadron 'Aggressors' F-16C landing at a forward operating base somewhere in Pakistan in April last year. The unit is assigned to the Air Combat Centre of Excellence at PAF Base Mushaf, which was commanded by Wg Cdr Noman Ali Khan on February 27. He shot down the IAF Bison.

Left: The wreckage of Wg Cdr Abhinandan Varthaman's MiG-21bisUPG Bison stored at a secret location in Pakistan. The jet was shot down by an AIM-120C-5 AMRAAM fired by Wg Cdr Noman Ali Khan in an F-16A. Wg Cdr Khan received the third-highest military medal, the Sitara-e-Jurat, for his effort.

Below: A close-up of the MiG-21bisUPG Bison tail with the serial CU-2328. The Bison pilot, Wg Cdr Abhinandan Varthaman, was returned to India on March 1. All photos Alan Warnes





1 No 15 Squadron commander Wg Cdr (now Gp Capt) Faheem Ahmed heads up the group. He was awarded the Tamgha-e-Jurat, Pakistan's fourth-highest military medal, for his role leading the squadron into battle. The three pilots directly behind him - Sqn Ldr Waqar Saleem, Wg Cdr Rashid Sulehri and Sqn Ldr Faisal Hassan - also flew in the raid and received medals. **2** All four of the missiles under the Bison's wings are stored in a secret location. The R-73 (AA-11 'Archer') and R-77 (AA-12 'Adder') that were under the left wing are seen nearest. Both were scorched by the fire that engulfed the aircraft after it crashed. The ejection seat was also on display. **3** Wg Cdr Abhinandan Varthaman's flying gear is on show at the PAF Museum at Faisal. **4** One of the displays at Faisal gives details of the three pilots responsible for the shootdowns and attacks, as well as the tail numbers of the F-16A/Bs involved on February 27. All three pilots received PAF awards.

1 moves. The busy ops personnel watched as Indian fighters probed PAF air defences in different locations as the Mirage 2000s headed towards the region. PAF quick reaction alert (QRA) F-16s and JF-17s were being stretched all along the border with India. As the IAF Mirages approached the line of control (LOC), they lobbed their SPICE 2000 weapons into Pakistan.

Air Cdre (ret) Kaiser Tufail, who the author first met in 2004 when he was base commander at PAF Base Masroor, continued the story: "With a standoff glide range of around 60km [37 miles] the aircraft did not need to cross the LOC and the SPICE 2000 bombs headed into Pakistani airspace in the autonomous GPS-assisted delivery mode."

Tufail, a former PAF F-7PG, F-16 and Mirage pilot who has written several books on the PAF, continued: "The bombs were aimed at a religious boarding school where over 200 students aged eight to 15 years were housed for their studies. But instead of hitting their intended target, the bombs fell onto a wooded area a few hundred metres away.

"It is widely believed the target elevation picked up by the weapon's GPS did not match the orthometric height [altitude above mean sea level as given on aeronautical charts].

Satellite images have shown that all the bombs overshot their targets by similar distances."

While the IAF continued to claim it had targeted a terrorist training camp, a day later European Space Imaging (ESI) published a high-resolution image of the area. This showed the buildings undamaged, with no sign of casualties. ESI managing director Adrian Zevenbergen added: "There were no signs of scorching, no large distinguishable holes in the buildings and no signs of stress to the surrounding vegetation."

The IAF disagreed with ESI's results, saying its own analysis showed four buildings destroyed, but did not release any images to support this.

At the Paris Air Show last June, a member of the Rafael marketing team showed *AFM* a photocopy of a high-resolution satellite image showing three holes in the roof of one of the buildings. When asked if it could have been Photoshopped, he responded: "I don't think so, but who knows!"

PAF retaliates

"At the same time as the mission to strike the madrassas was going on, the IAF was feigning multiple intrusions in a bid to draw away the PAF combat air patrol [CAP] F-16s and JF-17 Thunders," explained Tufail. "But they stood their ground, as this

'cat and mouse game' had been on-going for several days by then."

Now it was the turn of the Pakistani public to call for revenge, while politicians and the military discussed options for what the PAF termed Operation Swift Retort. So, as night fell on February 26, the IAF was on full alert for a PAF counterattack. When dawn came and there was no sign of the PAF, the Indians lowered their alert levels, not believing a strike would occur during daylight hours. They were wrong.

Tensions now escalated into full-blown aerial warfare, as Tufail explained: "A strike package of four Mirage 5PAs and dual-seat Mirage IIIDAs of No 15 Squadron and two JF-17s of No 16 Squadron, supported by a big swarm of escorts and patrolling fighters [a mix of F-16A/Bs and JF-17s], grounded the scopes of the IAF's ground radars at 0920hrs. Working at the rear of the fighter package were the PAF's Saab Erieye AEW&C aircraft, and the Dassault Falcon 20ECM, with electronic warfare officers ready to jam the opposing forces."

The two Mirage 5PAs were each armed with an H-4 standoff weapon that Pakistan had developed with South Africa's Denel in the mid-1990s. When the 5PA pilots dropped the weapons, a pilot sitting in the rear of each of the two Mirage IIIDA communications

control aircraft steered the H-4 via data-link. These Mirages are more than 50 years old, but the PAF had upgraded the delta-winged fighters several times, adding avionics to ensure they remain capable.

According to Tufail: "The Mirage IIIDA control aircraft has to continue flying towards the target, refining the H-4 bomb's flightpath till impact. The bomb can be steered with great accuracy, as the high-resolution image of the target seen by the bomb's seeker head is constantly relayed to the control aircraft."

The surprise attacks during the early hours of February 27 did not cause any harm.

Tufail continued: "Since the purpose of the mission was essentially to demonstrate that Pakistan had the resolve, as well as the capability, of responding in kind, it was decided that there was no compelling need to pick the front door of a brigade commander's office or the air shafts of soldiers' bunkers. General area-bombing of open spaces in military garrisons near the Line of Control was, therefore, agreed upon. It was expected that this 'abundance of restraint' would prevent mass carnage in the Indian military garrisons, which could otherwise lead to a chain of escalatory actions, and spiral into a very dangerous all-out war under a nuclear shadow."



Electronic warfare winners

The JF-17s were each armed with two 1,000lb (454kg) Mk83 Indigenous Range Extension Kits (IREKs) that became operational in 2017. Developed, integrated and qualified by Pakistan-based Global Industrial & Defence Solutions (GIDS), the IREK has a range of up to 37 miles (60km). GIDS has converted Mk80-series general-purpose bombs into satellite-aided inertial navigation system (GPS/INS) guided bombs with a tail unit incorporating aerodynamic control surfaces and glide wings. It provides the JF-17 with a very potent day and night capability to engage a variety of targets.

Not surprisingly, the IAF's QRAs

reacted to the strikes with Mirage 2000s, Su-30MKIs and MiG-21s all heading towards the attackers. Electronic warfare played a pivotal role in both sides' battle plans, but it was the PAF's No 24 Squadron with its highly modified Dassault Falcon 20ECM that emerged with its reputation considerably enhanced. The unit's highly modified business jets jammed the IAF fighters, so they were unable to communicate with each other or their air defence controllers. There was no IAF network-centric warfare - the aircraft on patrol were not data-linked (possibly due to system malfunctions), so the IAF was in complete disarray, unable to determine what was happening. Former Indian Army officer

Pravin Sawhney, now an independent military analyst, was critical of the IAF: "The PAF had better electronic warfare jammers and, as a result, the IAF could not communicate. If you do not win the battle in the electromagnetic spectrum, you will never win the war."

IAF confusion meant their aircraft were sitting ducks. Two PAF F-16s on a CAP, led by Sqn Ldr Hasan Siddiqui, were vectored by PAF air defence controllers on to what turned out to be Su-30MKIs. Tufail picked up the story: "After sampling the target data and confirming valid firing parameters, Hasan launched an AIM-120C-5 AMRAAM. Missile flight data fed back to the F-16B's fire-control

computer in real-time indicated that the missile had hit the target." Confirmation, however, remains moot, as the engagement took place across the LOC in Indian-held Kashmir, and the IAF has not been forthcoming with any details.

At the time, Pakistan's Director-General Inter-Services Public Relations (DG ISPR) stated in error that a JF-17 had shot down the Sukhoi.

A lot of confusion ensued on the IAF side, which led to an Israeli-made Spyder surface-to-air missile (SAM) shooting down a Mi-17V-5 helicopter flown by No 154 Helicopter Unit from Srinagar AFS. All six aircrew and a civilian on the ground lost their lives in the crash.

Almost immediately after the

Below: Six Indian Air Force Mirage 2000s, armed with SPICE 2000 standoff weapons, departed Gwalior late on February 25 but failed to hit their targets. The package is likely to have included a dual-seat Mirage 2000TH - this example is seen at Gwalior AFS fitted with a Remora electronic countermeasures pod.





1 claimed Su-30MKI shootdown, the Indian military held a press conference to show off damaged AMRAAM components. They were trying to prove F-16s were involved in the action, hoping the US would sanction the PAF, but that doesn't appear to have happened.

According to Tufail: "Monitoring of the radios by the PAF revealed the pilot of a Su-30MKI had called 'Bingo' [low on fuel] only 25 minutes into the mission, even though it can fly up to two hours. Around the same time, two Mirage 2000s also exited the active zone after claiming their air intercept radars were broken. That was strange, because PAF F-16s had picked up tell-tale transmission 'chirps' of the apparently serviceable Mirage 2000 radar on their threat-warning systems a short time earlier."

The IAF claims to have shot down a PAF F-16 during the

air battle. The PAF denies this ever happened and, on April 5, the US government issued a statement that none of the Pakistani F-16s had been lost.

Shootdown

The air battle saw five of the IAF's agile MiG-21bisUPG Bisons of No 51 Squadron from Srinagar AFS being scrambled. They should have been working with the Su-30MKIs and their more powerful N011M Bars passive electronically scanned array (PESA) radars. The *Flankers* were expected to data-link their longer-range aerial picture to the Bisons operating ahead of them, allowing the MiGs to keep their radars switched off to evade detection by PAF radars.

However, the degraded communications meant the Bisons weren't receiving anything from the Sukhois or the air defence controller. It left the pilots on

their own. One of them, Wg Cdr Abhinandan Varthaman, was initially vectored towards some PAF fighters. Tufail continued: "Abhinandan had stayed low and had even switched off his IFF [identification friend or foe] to stop the PAF from tracking him." Before communications were downgraded, the Indian pilot had kept his radar controller posted by reporting his position in pre-arranged codes. "However, he had forgotten that the PAF's AEW&C aircraft, unlike the ground-based air radars, could clearly see him in their sights," said Tufail.

The information picked up by the Erieye was relayed to an F-16, flown by Wg Cdr Noman Ali Khan, commanding officer of No 29 'Aggressors' Squadron. Radio monitoring by the PAF heard Abhinandan being told by his controllers

to turn back, but he couldn't hear the instructions so didn't alter his course. As soon as the MiG crossed the LOC, it was hit by Noman's AMRAAM, sending the jet spiralling out of control. Fortunately, Abhinandan ejected but he came down in Pakistan. After a confrontation, during which he fired his pistol into the air and was beaten by locals, he was rescued by Pakistan Army police and taken into custody. Abhinandan was subsequently interviewed by PAF intelligence before he was returned to India on March 1.

In the wake of the PAF's performance, overseen by Air Chief Marshal Mujahid Anwar Khan, Pakistan celebrated. It was an outpouring of national pride perhaps unrivalled since Pakistan won the Cricket World Cup in 1992.

In January, the author was taken to a secret location in Pakistan to see the remains of Bison CU-2328. The fuel tank was still attached to the jet when it crashed, and shrapnel from the AMRAAM had caused damage around the rear of the aircraft. At another unnamed location, the author was shown the jet's four air-to-air missiles (AAMs). The two R-73s (AA-11 *Archer*) and two R-77s (AA-12 *Adder*) were easily recognisable, although the R-73 on the left wing's outer station was badly burnt from the impact fire, but it was clear to see the missile had never been fired and that the rocket motor was still intact.

This refutes claims made





“We have to be aware of modern technologies, and if the acquisition of a new fighter fits into our doctrine then we will try to acquire it. The balance has to be maintained.” ACM Mujahid Anwar Khan

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by former IAF commander ACM Dhanoa to the *Hindustan Times* on February 11 this year that the F-16 was shot down by Abhinandan. For his part, Abhinandan has never said he shot down an F-16.

Conclusions

Close observers of the PAF will perhaps not be surprised that the air arm fared so well against the IAF. The PAF makes the most of scarce, often old resources, managed and used in a way that addresses tactical and strategic requirements. Under Project Vision, the PAF has established a networked air defence network, linking many foreign-made systems to the three regional air commands and the AHQ, to provide one recognised air picture.

In addition, PAF personnel

train continuously, often in local exercises such as Saffron Bandit or High Mark, or with visiting air forces such as the USAF, as well as air arms from China, Saudi Arabia and Turkey. There have been regular exercise deployments too, beginning in 2004 when the PAF first attended Anatolian Eagle at Konya in Turkey. The PAF and China's People's Liberation Army Air Force (PLAAF) participate annually in Exercise Shaheen, with the latest Shaheen XIII drills taking place last August.

Operation Swift Retort will go down in PAF history and Pakistan will no doubt reflect on the service's achievements of February 27, 2019. However, the IAF will also learn from its mistakes. When *AFM* spoke to the PAF commander, ACM Mujahid Anwar Khan, in late January this year, he said: "One of the lessons the Indians should heed

is not to use military applications, especially air power, flippantly." The commander, who had been in his post less than a year when Swift Retort took place, added: "Restraint is needed because with BVR [beyond-visual-range] and standoff weapons, air forces can attack at longer ranges and then the situation spirals out of control. India should have known we would respond to their attacks – they didn't have to cross the LOC. They underestimated our resolve."

He continued: "We could have done a lot more damage than we did, by shooting down more aircraft, so I was very proud of the guys that they showed restraint."

The IAF is already talking about upgrading the radars of its Su-30MKIs with an active electronically scanned array (AESA) to provide increased situational awareness. Longer-term, the IAF will operate the

Rafale and the Meteor, perhaps the best BVR air-to-air missile in the world. On this point, ACM Khan told *AFM*: "In the 1970s and 1980s we were always outnumbered, and we didn't have BVR. But we did have [infrared] missiles, so we trained hard and were prepared. Denial is the first failure, but acceptance leads to success."

The PAF commander, an F-16 pilot, added: "Do you think we haven't trained for the Rafale? It doesn't matter what kind of technologies the IAF has, we will have the capacity to defeat it. We have to be sharp and outmanoeuvre them with various methodologies."

ACM Khan concluded: "We have to be aware of modern technologies, and if the acquisition of a new fighter fits into our doctrine then we will try to acquire it. The balance has to be maintained." **AFM**



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1: An Indian Air Force MiG-21BisUPG Bison at Gwalior AFS in 2006, armed with an R-60 (AA-8 'Aphid') short-range air-to-air missile. 2: A No 15 Squadron Mirage 5PA parked at a forward operating base in mid-April 2019. Six weeks after the events of February 27, Operation Swift Retort was still ongoing and all PAF personnel and jets remained on a high level of alert. 3: A No 16 Squadron 'Black Panthers' JF-17 lifts off during a training sortie. Two of the unit's aircraft dropped 1,000lb IREKs on targets in India in retaliation for the strikes on Balakot during February 26. 4: Refuelling support for the IAF's mission was provided by an Il-78MKI tanker.