"Good God, Sir, Are You Hurt?" The Realities and Perils of Operating over India's Troublesome North-West Frontier [1]

By Lieutenant Colonel Andrew Roe

Flying over India's troublesome North-West Frontier (now modern-day Pakistan) was a hazardous undertaking, filled with ubiquitous dangers and hardships. Despite the maze of knife-edge hills, the oppressive furnace-like heat and the ice-cold winds, the constant strain and regular loss of life, this was an experience not to be missed and one to be proud of. This article homes in on the everyday realities and threats faced by aircrews posted to 'The Grim' – the name given to the untamed frontier by the army.

The bomb burst against the hillside in a smother of orange flame with a crack that could be heard in the cockpit above the roar of the engine. The pilot dipped in farewell over the Scout fort before flying back the twenty miles to Miramshah for a tricky landing in the near-darkness.

F. Leeson, *Frontier Legion*

Introduction

Flying over the precipitous and turbulent British-controlled North-West Frontier of India – where conditions of war, or near war, were the rule rather than the exception – was a tense and uncomfortable experience. Aircraft seemed flimsy and underpowered among the towering dust-coloured mountains, while the landing grounds seemed hopelessly small and risky. Aircrew suffered from isolation, extremes of temperature, rarefied air and experienced great difficulty in navigating over such wild territory. Moreover, the breadth of roles for the aircrew was great: reconnaissance, propaganda flights, distributing copies of government terms, visits to remote forts and cantonments,[2] casualty evacuation, air demonstrations, support to columns[3] and isolated piquets, ranging for artillery guns, dropping supplies, one-off flights at the request of local political officers, and bombing recalcitrant tribesmen all combined to place considerable strain on aircrew and the early fleet of fabric-covered aircraft. But, above all, it was the fear of crash landing in tribal territory that caused the greatest anxiety for the aircrew. A flash, followed by a puff of white smoke, was probably the only indication that a crew knew that they were being fired at; tragedy could occur at any moment. If caught by an 'unlucky' tribal bullet, or if engine failure occurred, the chance of crash landing in friendly territory was slim. Tribal brutality – especially amongst the volatile Afridis, Darwesh Khel Wazirs and Mahsuds[4] tribesmen – was legendary and highly feared by all who served on the frontier. Torture and beheadings were not uncommon. However, in the vast majority of cases, the prospect of a bag of gold was more than enough to ensure that downed aviators become hostages for ransom and bargaining, and that their safe return would occur in time. Nevertheless, flying over the wild jumble of towering peaks, sheer gorges and isolated valleys required untiring courage, good fortune and constant vigilance. It was rare for the frontier to be free from trouble for more than a few days at a time. Beneath the veneer of 'government control' was an irrepressible ruthlessness, an aversion to intrusion and a tribal philosophy of living that was liable to erupt into violence at the slenderest provocation. It is little wonder that the words 'North-West Frontier' caused the blood of most aircrew in India to flow more quickly. This article homes in on the everyday realities and dangers faced by aircrews posted to 'The Grim' – the name given to the untamed frontier by the army.

Challenges, Hardships and Dangers

To be effective on the frontier, air power relied on accurate intelligence and speed of employment; any delays in action were increasingly viewed by the tribes as weakness. The main source of intelligence came via the political chain and various informers who were keen to sell

their information. The former depended mainly on personal contacts and tribal knowledge, supported by the *kassadars* (loosely organised tribal policemen paid by the political agent), 'scouts' or Irregular Frontier Corps (a force of lightly-armed local levies led by British officers with a reputation for extreme toughness and endurance), and 'loyal' *maliks* (government-endorsed tribal leaders or elders). This well-established hierarchy provided a regular flow of information on internal politics, tribal groups, rivalries and personalities. It also provided actionable intelligence and information. However, informers were prone to informing both ways and were adept at misleading government forces; false information was ever-present.[5] Likewise, it was not easy to gain 'timely' information in such a xenophobic environment.[6] The Royal Air Force (RAF) possessed its own intelligence officers who linked into the regional civil/military intelligence networks to understand tribal grievances and issues.[7] In contrast, British and Indian battalions stationed in the heart of tribal territory often failed to develop effective intelligence structures or a detailed understanding of the tribesmen and their mental processes. The same was true also at brigade level. Geoffrey Moore, a platoon commander and part-time brigade intelligence officer of the Razmak Brigade in 1936, recalls: 'I was soon to find that my grandiose title of Brigade Intelligence Officer masked the old-fashioned role of Brigadier's Orderly Officer. As my platoon wag [a humorous or jocular individual] remarked later when someone asked the meaning of my B.I.O. armband, "Brigade Ignorance Officer, I expect." He really had hit the nail on the head.'[8]

Once a report had been verified, triggering aircraft in a timely manner was vital. The aim was to isolate any outbreak of violence before it could spread. Air Commodore H. le M. Brock recalls: 'It is as with a fire brigade – one engine can deal with a small outbreak, but if there is much delay in attending to it the fire becomes a big conflagration.'[9] As the mere threat of air power could cause a tribe to reappraise its position, a speedy response was essential. Field Marshal Sir Philip Chetwode recalls: 'In many cases, by taking swift action in a few hours instead of the weeks that it might have taken ground troops, aeroplanes have crushed our incipient trouble which, had it spread, would have involved a serious campaign.'[10] This relied on the efficient working of the administrative machinery to obtain political and government decisions. It also called for effective communications, a short distance from the airfield to the target, and a duty pilot at a high state of readiness.[11] However, the political officer had first to sanction the RAF's use, and this could often take considerable time; 'politicals' were prone to delaying the pronouncement to use force for as long as possible. Decisions could only be expedited if a member of the political administration was in a difficult situation and provided immediate authority to act. Requests for help, often written on a torn sheet of paper from a Field Service Pocket Book and delivered by pigeon,[12] were frequently short and to the point:

> HELD UP BY SNIPER FIRE AT (here followed a Map reference). ONE SCOUT KILLED. TWO SCOUTS SLIGHTLY INJURED. P.A. [Political Agent] SAFE. AIR DEMONSTRATION OVER VILLAGE MIGHT HELP BUT EXPECT TO BE ABLE TO MOVE AFTER DARK. T.O.O. 1146.[13]

To complicate matters for the air force, offensive action taken against hostile tribesmen had

to be confined to those actually engaged with government forces or seen firing at aircraft; the days of conducting active operations without authority were long gone. Those seen approaching a column with apparent hostile intent, or a concentration of tribesmen manifestly preparing for an ambush, could not be engaged until they were seen or known to have opened fire. No action could be taken against tribesmen in villages – tight clusters of mud-brick dwellings and compounds – unless due warning had been given by coloured leaflet and authority granted[14] and, even then, villages offered relatively poor targets.[15] 'Courageous restraint,' a term very much *en vogue* today in coalition operations in Afghanistan, was alive and well on the frontier in the early twentieth century. Moreover, pilots were not allowed to fly within three miles of the Afghan border, except in an emergency, allowing hostile tribesmen to slip back and forth across the Durand Line (the artificial international border, negotiated between British India and Afghanistan, but ignored by tribesmen on both sides of the divide) unmolested. Air Commodore N.H. Bottomley notes wryly: 'Frequently soldiers, who have observed these methods at first hand, have described them to me as fantastically soft-hearted, yet the Foreign Press has characterised our methods as barbarous.'[16]

Except from low altitudes, it was also almost impossible to differentiate between hostile and peaceful villagers as well as government forces, placing a significant strain on the aircrew. Despite regular scanning with field-glasses, pilots and air gunners had to rely on movement or the flash or smoke from a tribesmen's rifle to locate personnel on the ground and identify where their assistance was needed most. Low trees, bushes or scrub routinely compounded the problem and made distinguishing combatants extremely difficult.[17] 'Their targets are tribesmen, who, clothed to assimilate to the exact colour of their background, and scattered in shapeless groups which have no clear outline either when halted or on the move, are all but indistinguishable at ground-level and quite invisible from height,' recalls 'Mauser.'[18] Reciting an incident whilst fighting in the village of Bui Khel, Frank Leeson, a British officer serving with the *kassadars*, highlights the realities of a mistaken identity: 'This time, diving steeply over us, the Tempest [aircraft] strafed the road just as our last section was crossing it. The pilot had evidently mistaken the scouts for pursuing tribesmen.'[19] Fortunately, there were no casualties on this occasion. However, serious accidents did happen. A few years earlier, in 1938, a party of *kassadars* was bombed in error. One man was killed and another three were wounded.[20] Close support was rarely used when *kassadars* were working in front of regular troops. Trying to make a distinction on the ground between friendly and hostile tribesmen often fell to the ground troops or political authorities. 'Bunch' Parsons who, prior to becoming the Political Agent, South Waziristan, served with the North Waziristan Militia, was badly wounded guiding RAF bombers onto hostile villages and tribesmen. For his actions he was awarded a Distinguished Service Order.[21]

More often than not, pilots had to rely heavily on the ground commander, who was often being shot at, to tell them roughly where the enemy was. If a commander wished to send important information, a smoke candle was set alight to draw the attention of the pilot, who, on seeing it, had to leave his task and make every effort to read the message displayed on the

ground. With only cumbersome and rudimentary radios, visual target indication, employing 'Ground Signals' or 'Popham Panels,' was the principal means of communication under these conditions. In the case of Ground Signals, a number of white linen strips, forming an arrowhead visible from the air, pointed in the direction of the attack. A crude system of linen bars across the tail of the arrow provided an approximation of distance. This provided only the most basic information and was slow to lay out. It was, however, a very simple but effective form of communication between ground and air, assuming there was enough light and visibility down a valley for the aircrew to read the message.

Like Ground Signals, the more sophisticated Popham Panels dated from World War I. First introduced in 1918, the panel weighted roughly 12 pounds and consisted of a sheet of dark blue American cloth (a waterproofed fabric, like oilcloth) about 10 feet by 8 feet with a white 'T' shape stitched to it. Branching off from this were more white panels, numbered 1-9, each of which had a dark blue flap that could be used to cover it. By selectively exposing specific combinations of these additional arms, a large variety of numbered shapes could be created, each of which was allocated a pre-determined meaning in accordance with a universally understood code. Between each combination, all flaps were covered to present the basic 'T.' Due to its complexity and slow speed of use, the code was not universally popular. Lieutenant Colonel H. de Watteville notes matter-of-factly in *Waziristan, 1919-1920* that: 'Popham panels proved of no great value [in the fast-paced operations of 1919-1920].'[22] Instead, the author extols the simplicity and swiftness of Ground Signals.

For routine communication, each frontier outpost had a large square patch of ground, often bordered by whitewashed stones, that was clearly visible from the air. Linen strips of various shapes and sizes were carefully laid out in predetermined patterns in accordance with the Ground Signal code. 'A post was thus able to lay out simple messages such as: 'I am under attack from the south,' or 'I have two seriously injured men, send medical help."[23] More complex messages were sent via the Popham Panel code. Having checked the meaning of the configuration of the canvas strips or the digit combination in his code book, the aircraft would 'wobble' its acknowledgement or, in poor light conditions, reply by Aldis lamp. However, if required, a pilot would respond by writing a short answer on paper. This was carefully enclosed in a small lead-weighted canvas bag, with a long tail of red and yellow streamers attached. The streamer not only slowed the descent of the bag but also assisted with identification on the ground. It was the responsibility of the second crewman to drop this as close as possible to the ground signal. Each post was exercised once a month in its ability to convey information by code. No forewarning was given and pilots logged the time taken for the unit to display its first communication.

Routine methods of communication were enhanced on the frontier by the 'X V T Close Support Code' in 1936. Like Ground Signals, the Close Support Code relied on a number of white linen strips weighed down by stones. These were used to create an 'X,' a 'V' or a 'T' to inform the pilot of friendly and enemy positions: 'X' indicated the position of the piquet or troops nearest the

enemy and signified that 'all is well;' 'V' signified that the enemy are in the direction in which the apex of the V is pointing; and 'T' was the SOS signal – a call for help when a piquet was likely to be overwhelmed or a sign that the tribesmen are following up a withdrawal so closely that it was impossible to get away. The advantage of this method was its speed, simplicity and ease of understanding from the air.[24]

But even this method faced practical challenges. It was not always possible to display or change a character to the circling aircraft above, especially if under tribal fire. Moreover, letters were often masked by shadows, bushes, low cloud and pockets of fog, or became so dirty with use that they were difficult to see from above. If not weighed down with stones correctly, windy conditions could result in an 'X' looking like a 'V,' resulting in the pilot wasting valuable time searching for a non-existent enemy. On rare occasions piquets forgot to pick up their ground strips when they withdrew. A common mistake was pointing the 'V' in the wrong direction. Such a rudimentary system was incapable of dealing with dynamic situations or of expressing a commander's intent.[25] Pilots often dropped written messages during an over flight to request clarification, but these were often lost, misunderstood or placed the 'retriever' in unnecessary danger. If conditions allowed, responses were collected using a hook on a slender boom suspended under the aircraft to 'snatch' a message bag on a long string stretched between two light poles. This required an aircraft to fly hazardously low; so low that pilots feared that the airframe's wheels would tangle with the string and 'take the whole contraption into the air.'[26] Moreover, most aircraft had a limited radius of action, and if delayed too long over an outpost trying to understand a message they could run short of petrol, resulting in a forced landing in tribal territory. However, this limitation did not stop the outposts having a little bit of fun. Colonel H.R.C. Pettigrew, a tough frontier campaigner, recalls:

> The hot weather had been very trying and the daily routine had become very dull in that particular post, and the post officer was fed up with putting our practice messages in code for rations or ammunition or wireless batteries, or all the other dull things he did not want anyway. So he decided to ask for something he really did want. But as it was not in the book he had to spell it out letter by letter on the Popham panel. "I want" was easy as it was in the code, but then laboriously came "M–A–E" (group). The aircraft waggled its wings and kept circling. "W–E–S–T" (message ends). The aircraft circled but did not waggle. It wanted a repeat. Again, slowly and painstakingly, the unusual though understandable message was spelt out. This time the pilot waggled his wings, though it seemed a trifle doubtful. A sort of shrug of his shoulders. He just had not heard of Mae West [the forces sweetheart]. However he returned to Miramshah, almost dangerously low on petrol by then, and made his report. No one was at all pleased and someone got a rocket. Post commanders went back to demanding ammunition after that.[27]

Though the tribesmen were not equipped with anti-aircraft weapons, and the RAF enjoyed complete control of the air, flying operations, once authorised, were by no means one-sided.

Sniping by tribal malcontents, of varying persistence and intensity, was an occupational hazard.[28] This was especially common when aircraft supported ground forces in contact with the tribesmen, calling for discriminating attacks. In these circumstances, high-level bombing, out of range of tribal fire, was out of the question. Close approaches, which gave a better view of the battle and greater accuracy in aiming, were necessary. These consisted of diving at the target at high speed at an angle of no more than 45° during which the pilot aimed the whole aircraft as accurately as he could at the objective. In these attacks, 'with the many wires, which seemed to hold the wings, vibrating in song,' aircraft were regularly punctured by bullet holes.[29] To mitigate this threat, aircraft dived on their objective using the forward machine-gun to help reduce enemy fire. They then dropped the bombs before the air gunner, with his face to the rear, fired his Lewis gun to dissuade tribesmen from sniping during the vulnerable pull-up and getaway. This proved to be a relatively effective technique and was known as a 'V.B.L.' (Vickers, bomb, Lewis) attack.[30] However, Group Captain G.M. Knocker recalls that even those flying at altitude (as high as 2,500 feet) were not immune from accurate tribal fire: 'We could not of course prevent sniping, and it was evident from the frequency with which aircraft were hit that the Mahsud had no difficulty in seeing us!'[31] He goes on to recall:

> On one bombing strafe a Bristol from 20 Squadron was shot down and the pilot and observer taken prisoner. We all carried "ransom chits" and these two officers, one a Canadian called Bishop, were exchanged for two camels loaded with bags of silver rupees, with which the Wazirs said they would build more towers and buy more rifles![32]

Such occurrences were not unique. Aircraft were at times forced down by an unlucky hit in the engine or petrol tank from a tribesman's bullet. Colonel C.H.T. MacFetridge notes that during large-scale operations in 1935, a Mahsud tribesman shot down, 'with a brilliant shot,' a reconnaissance aircraft flying over Makin. He recalls: 'It plummeted in sickening fashion to the ground.'[33] On 3 April 1937 an aircraft supporting operations in the Shahur Tangi was damaged by a bullet in the petrol tank, but managed to crash-land beyond tribal harassment on the road near Chagmalai.[34] In April 1939 *The Times* reported that, during operations against the Fakir of Ipi, a Hart aircraft of No. 11 (Bomber) Squadron was fired at near Chaprai and the air gunner was wounded in the leg. The article notes: 'This is the first time during the past two years of operations in Waziristan that any member of the crew of an aircraft has been wounded by rifle fire.'[36] Lewis Gordon, who served on the frontier in 1940, recalls another incident: '[An] unusual casualty was the Westland Wapiti biplane allotted for air reconnaissance and strafing. Ignoring standing orders not to fly below one thousand feet he came within rifle range of the enemy. A single shot rang out, the plane seemed to falter and then dived to the ground. A tribesman had scored a lucky shot and hit the pilot. Because the terrain surrounding the crash was no longer piqueted, we had to put in a substantial counter-attack to recapture the ground and the remains of the aircraft.'[37] Perhaps surprisingly, many soldiers and scouts felt that it was preferable to be fired upon at long-range when on the ground, rather than being fired at when in the air. Major Walter James Cumming, an experienced frontier hand, recalls a single-engined plane being shot down by Mahsud rifle fire in Waziristan and the ensuing operation to secure the stricken crew:

> This pilot, with great skill crash-landed his craft safely in the Taki Zam [a dry river bed or *nullah*] about 200 yards beyond our position on the plain. But from where we were we were not able to see into the *nullah*, and to rescue our Air Force friends about twenty-five of us Scouts ran forward to the far edge of the bend, from where the stranded airmen were seen struggling to get out of their cockpits. While two of our men, one an Indian officer and the other a *sepoy* [infantry soldier], ran down the steep slope of the *nullah* to help back the two Britishers, who could barely walk since both were wounded, the rest of us took up positions and gave the two airmen and our two men covering fire to prevent the Mahsuds from rushing in to capture or kill the four men. With the greatest of courage under heavy fire our two lads helped the airmen along, half-carrying them struggling to get them up the slope of the *nullah*.[38]

Engine failures were also common across the fleet of veteran World War I aircraft – which remained on in India until the early 1930s – and resulted in equal challenges for the downed aircrews and authorities.[39] For example, a DH 9A from 27 Squadron, flown by Flying Officer R.J.M. De St. Leger, encountered engine trouble on 21 January 1922 and force-landed east of Mandesh. The crew escaped uninjured from the crash and, despite an anxious period in tribal captivity, were later escorted unharmed to Ladha.[40] Lieutenant Colonel H.C. Wylly briefly recalls another incident caused by engine failure: 'Two officers of the RAF were captured after a forced landing in the Bazar Valley, and were eventually returned to Landi Kotal after about a fortnight's captivity … The observer who underwent this unpleasant experience – Lieutenant Hoare – served in the Battalion [The Green Howards] for a short time before joining the RAF …'[41] However, engine unreliability was only part of the problem. Many aircraft lacked the power and rate of climb to operate safely in the mountains. Most were designed for European climates and were never envisioned conducting operational tasks at altitude over the mountainous frontier.

RAF crews also faced unique dangers from the continually varying weather conditions. In July 1923, during a series of raids near Razmak, thick cloud suddenly cloaked the hills surrounding a target zone. The lack of visibility resulted in several crashes, including two Bristol F.2 Bs from 20 Squadron.[42] Shimmering heat haze, which amplified as the heat of the day increased, also deteriorated visibility considerably and made take-offs and landings particularly hazardous. However, there were other unique and seemingly inexplicable challenges to visibility. For example, the *gurgura* dust in the Jandola area of Waziristan. It was named the *gurgura* by the Mahsud tribesmen, as it routinely occurred during the time the *gurgura* bushes were in full fruit. These were large olive-coloured shrubbery scattered throughout the area, at a height of roughly 3,000 to 4,000 feet. Colonel H.R.C. Pettigrew recalls: 'Just why these dust clouds formed at ground level I am not so sure. I expect it was some combination of wind and atmosphere, but whatever it was the beastly dust haze would settle over the countryside, cut visibility to fifty yards and fill everything with gritty dust.'[43] Sand and dust storms were also common across the frontier, reducing visibility to almost zero. Pilots caught out in a storm had to navigate as best they could by map, compass and dead-

reckoning. Moreover, keeping in visual contact with other aircraft in such conditions was challenging. 'Zogging,' a means of routine communication between aircraft, by transmitting messages by Morse code by arm signals over the side of the cockpit, was out of the question. For reasons of safety, numerous sorties had to be cancelled due to fierce sand storms. Ferocious squalls also had the strength to damage aircraft on the ground; even those tied down could be flipped over. But there were other natural conditions that could cause equal damage:

> Only when I entered the storm did I realise that it was hail – and no ordinary hail! Hailstones as large as pigeons' eggs crashed down on to the Wapiti, bouncing off the wings and engine cowling in all directions with a noise that I could hear through my helmet above the roar of the engine. I heard a gasp from the back and glanced over my shoulder to see that Sanderson had disappeared onto the floor of his cockpit. A long crack spread over my windscreen as one hailstone hit the centre of the glass panel. I was committed now and the only thing to do was to plough through, hoping that it was a narrow belt. I lowered my seat to the bottom position to protect my head as much as possible and concentrated on keeping straight on instruments. The hail continued to thrash down for two or three minutes and we emerged into bright sunshine as suddenly as we had entered the storm.[44]

Likewise, the terrain, coupled with high temperatures, frequently produced conditions of extreme atmospheric turbulence, often extending up to thousands of feet from the surface of the ground, which made 'flying highly uncomfortable and climbing out of a narrow valley, after reconnaissance or bombing, could be a hair-raising experience.'[45] As the daily temperatures increased, aircraft wallowed and bucked uncomfortably and, by mid-May, were frequently grounded after 09:30 hours. Few pilots possessed regular experience of such an unforgiving environment, especially as flying over tribal territory was closely controlled by the political authorities.[46] Similarly, flying in narrow steep-sided valleys was particularly dangerous and nerve racking. A moment's lapse in concentration could result in catastrophic damage to a wing tip. A combination of bright sunshine and deep shadow could mislead a pilot into thinking that there was more room than was in fact the case. Few aircraft possessed sufficient power to rectify a mistake in judgement, especially at altitude.

It was also relatively common to encounter large birds of prey (mainly kitehawks with a wing span of roughly 5 feet 8 inches and large vultures) hovering close to the landing grounds, usually at about 300 or 400 feet, or on the ground feeding on the carcass of a dead animal close to the boundary fence. This was a routine hazard, well understood by the pilots, as the birds could usually be seen and were generally below circuit height. However, 'if a bird was encountered, the rule was always to climb above it and never to pass below it. When frightened, these birds had a nasty habit of closing their wings and diving; they had been known to go right through the fabric wing of an aeroplane below them.'[47] Air Marshal Sir David Lee recalls an incident:

> Just as we crossed the boundary at about thirty feet, to my horror, a black mass of birds rose up in front of us. There must have been dozens of them and it was quite impossible to avoid going straight into them. Because we were in close formation there was no question of turning sharply and the Wapiti certainly had neither the power nor the speed at that moment to pull up and hope to climb over them. A second later and I was in the middle of the flock and I instinctively ducked into the cockpit as a mass of bodies, feathers and blood hurtled into me accompanied by a series of bangs and thuds as the aeroplane ploughed its way through.[48]

While extreme climatic conditions and large birds of prey proved hazardous, even take-offs and landings at established airstrips offered unique challenges. This was especially true of the remote and unpopular Emergency Landing Grounds (ELGs) dotted throughout the frontier. For example, Lachi, 30 miles south of Kohat and situated alongside the main road to Bannu, was typical of landing grounds on the frontier. It was little more than 400 yards square (the minimum length for an ELG and suitable only for emergency use by Westland Wapitis) and had a surface of hard-packed sand and gravel, known locally as *mutti*, with a white circle in the middle. Thal, in comparison, had an ELG built up on a large escarpment in the centre of the valley, with one side dropping steeply down to the Kurram River. No two ELGs were alike, varying in size, shape, altitude, gradient and surface. The detailed specification of each was found in the official handbook; a must read for any pilot unfamiliar with an ELG. Regardless, each ELG required great care and considerable skill in using them. They also required regular inspection from the air to check for damage or tribal sabotage;[49] tribesmen frequently planted crude improvised explosive devises on the airstrips in the hope of destroying an unsuspecting aircraft on the ground. Inspections were often achieved by circling the landing ground at approximately 1,000 feet, while the air gunner had a good look at the surface. Aerial or ground inspections were more often than not undertaken by a flight of three mutually supporting aircraft. In the case of the latter, one aircraft inspected the ELG cautiously while the remainder provided over watch, circling above.

In contrast, Regular Landing Grounds (RLGs), like the unusually banana shaped Drazinda, 30 miles up the Tochi River from Bannu, possessed boundary markings and a windsock. It also had a permanent tribal *chowkidar* (watchman), who reported local incidents to visiting crews and kept the firm yellow sand surface free from big stones, ruts, camels, donkeys and goats. In addition, a stock of petrol (48 fuel drums, much prized by the tribesmen) and a re-supply of Very cartridges were held in a small locked hut. Like all regular landing zones, Drazinda required customary inspection, especially as there were no army garrison or police posts nearby. This necessitated an aircraft to land to allow the crew to conduct a physical inspection. However, without trained assistance to help operate the Wapiti's low geared winding handles (essentially skilled three-man muscle-power with the strongest grasping the propeller tip) or a 'bag and rope,' it was unsafe to stop an aircraft's engine on the ground.[50] The usual procedure, therefore, was for the pilot to 'taxi' around the perimeter while the air gunner checked the stocks and conducted a rapid inspection of the landing ground.[51] Air Chief Marshal Sir David Lee recalls the dangers of restarting a hot engine:

> It was highly dangerous to enlist the help of most of the *chowkidars* or any itinerant natives to help with the handle winding. If the [Jupiter] engine backfired, as it often did, the sweating, terrified men on the handles could easily fall into the propeller which would probably mean a new propeller, and most certainly a new *chowkidar*. Even among disciplined troops and policemen, engine starting was not a popular task and all pilots and air gunners had to take the greatest care to see that the wheels were properly chocked and the men correctly positioned at the winding handles, with strict instructions to stand still if smoke and flames belched out after a backfire.[52]

Other RLGs, like Wana, in southern Waziristan, had several of the garrison troops trained in the use of winding handles; therefore, it was reasonably safe to stop an aircraft's engine during a short visit. However, prior to a visit it was customary to fire a Very light over the post indicating an aircraft's intention to land. This resulted in a few soldiers or scouts rushing onto the landing ground to ensure that any goalposts or other temporary obstructions were removed from the landing strip.

However, all runways possessed unique challenges and dangers, based on their location and altitude. Razmak landing ground, for example, roughly square in shape and almost 6,500 feet above sea level, strategically placed at the junction of the mountain trails that led from Afghanistan into the Bannu plain, had a surface gradient of 1 in 16. For aircraft with insufficient power at altitude to climb the slope, it was mandatory to land uphill whatever the wind strength and direction. Moreover, it was impossible to 'go round again' if the final approach was unsatisfactory. It was alleged that one in four of all those who landed at Razmak had some sort of an accident or incident.[53] Only experienced pilots landed at Razmak, and it was little wonder that the airstrip was regarded as the most difficult on the frontier.[54] Additionally, maintaining the airstrip was a constant challenge at certain times of year. Water pouring down from the mountains during the torrential rain of the monsoon often made holes and ruts so deep that they could dislodge a tyre. The job of levelling the landing ground and removing stones fell to the resident troops; loose stones could lead to flat tyres, damage to the fabric of the aircraft, particularly the undercarriage, and frayed control wires.

The small, irregular shaped airstrip at Sararogha, 30 miles south of Miramshah, presented significant challenges. The landing ground was tricky in that two sides disappeared over precipices; one was a drop of some 300 feet down to a river. However, it was the take-off that caused greatest consternation. Pilots disliked the take-off from the Sararogha landing ground enormously. On rare occasions, with the wind awkward, aircraft would have to take off at the far end of the airstrip, almost dip momentarily into the Tak-i-zam ravine, a perilous drop, and then climb frantically to avoid the cave-riddled cliffs and hills on the far side.[55] Fortunately, there was experience on hand to assist the aircrews. The RAF had a liaison officer in the army camp in Sararogha. His role was to brief all pilots before a patrol,

including the best way to tackle the difficult take-off.[56] However, it was also relatively common for 'ground experts,' particularly scouts officers with detailed knowledge of the terrain and villages, to fly on specific missions.

Their role was often to point out a designated village or target. Colonel W.I. Moberly recalls:

> One of the less attractive tasks which occasionally fell to Frontier Scouts officers, because of their detailed knowledge of the ground along certain stretches of the Durand Line frontier with Afghanistan, was to lie face down in the belly of a Vickers Valencia [bomber transport] with a map (and a sick bag) as an insurance against the bombardment of any village on the Afghan side of the Frontier. As ground looks quite different from the air and as the tribal villages on either side of the frontier were of identical construction, the task was no sinecure and involved much study beforehand of maps and air photos, all under the threat of some horrific international inquiry if one got it wrong.[57]

Nevertheless, in taking to the air, volunteers experienced the same dangers as the aircrew. But not all hazards occurred in flight:

> It was decided that our aircraft, with a full load of bombs, would take off just after dawn on the morrow. The pilot, the officer who controlled the bomb-releasing devices and myself climbed into our tandem seats in the dark hour before dawn. The two engines were started up and allowed to run for a few minutes to warm up. Then we roared up the *maidan* [an open space, in or near a town], gathering speed until we must have been doing 60 to 80 miles per hour. After a few hundred yards I noticed that we were still skimming along the ground and were not in the air. I began to worry, for not very far ahead, looming up in the distance, was a dark line which, as we got nearer proved to be the end of the *maidan* marked by high trees. I was getting scared and I expect the pilot was too, for he switched down both engines suddenly. We came to a standstill within 10 or 15 yards of the line of trees. The engines had been left ticking over and we turned and taxied back to the starting line. I remained aboard while the others discussed matters and some airmen made an adjustment or two. From the odd word I heard, I gathered that we were slightly overloaded with petrol and bombs and that perhaps some tank had been badly filled. Anyway, after fifteen minutes' delay, by which time dawn had broken, we were screaming along the runway again, this time becoming airborne quickly and, gaining height, were soon up to almost 2,000 feet, at which height we seemed to remain as we headed towards our objective.[58]

Furthermore, some volunteers took to the air themselves. David Williams, a fearless scout officer, whose hobby was flying and who had learnt to fly in Karachi, piloted a Westland Wapiti in 1940 on a routine mission to drop *chapli* leather on Ladha. The flight occurred without tribal incident, although the leather dropped scored a direct hit on the post hospital and went clean through the roof.[59]

Unsurprisingly, there were unique challenges associated with landing on the frontier. Flying Officer Richardson, of 27 Squadron, when landing at Kohat, an airfield on the outskirts of the town, failed to appreciate the length of a long train of camels, tied nose to tail, flanking the runway. Misjudging his height, he hit the last camel in the line which, as it turned out, happened to be the tallest. 'The undercarriage of the Wapiti took the head off the unfortunate animal and carried it onto the aerodrome where the Wapiti, literally tripped up by the impact, stood on its nose after bouncing heavily on its wheels.'[60] Major Walter Cumming recalls a similar incident while observing an aircraft landing in Waziristan:

> After it had circled once or twice it came down to land on our flat *raghza* [plateau overlooking a valley], the surface of which was fairly level. It landed safely, but while taxiing to a halt a runaway mule got into its path and the plane, colliding into it, turned a complete somersault and lay with its wheels in the air. The unfortunate animal that caused the accident paid for it with its life. It died on the spot with a broken back. From under the plane crawled out two figures, the pilot and another officer, both obviously badly shaken but miraculously unhurt.[61]

But other more bizarre occurrences were not uncommon:

> A Wapiti flown by Flying Officer Arnold Wall was coming into land over the road when a small Indian boy threw a stone at it. Unbelievably the stone found its way through the mass of flying wires and struts and hit Arnold in the eye. He managed to land safely despite intense pain but he subsequently lost the sight of his damaged eye. This unhappy incident finished his career as a pilot but he transferred to the Equipment Branch where he started a new career and reached the rank of Group Captain.[62]

The combination of a five year tour of duty with limited possibility of any home leave or mid tour break, added with conditions of extreme heat and danger, placed considerable mental as well as physical strain upon the men of the RAF on the frontier.[63] Flying over hostile tribal territory was probably the greatest underlying psychological strain.[64] Forced landings in tribal territory were viewed with the greatest trepidation by the aircrews. Unnervingly, there were few suitable ELGs for aircraft carrying ordnance. If available, pilots tried to land on the straightest section of government-constructed road nearby or close to a fort or piquet. This was seldom possible and a number of aircrews were killed during forced landings in rugged terrain. Even aircraft fortunate enough to crash-land safely outside a scout or *kassadar* fort on the frontier faced challenges. Group Captain G.M. Knocker recalls one example:

> One of 31's aircraft had to force-land outside the fort (Wana). Five or six *khassadars* did a gallant sortie from the fort, leading two ponies on which the two aviators mounted and set off for the hills, escorted by the *khassadars*, who fought a 10-mile rearguard action, and eventually delivered the aircrew safely at Kaniguram, 80 miles away, the next day,

> the Wazirs covering the whole distance on foot. It was a very fine performance. I gather that the airmen wished that they too had been on foot after 80 miles in the saddle![65]

Wounded aircrew unlucky enough to fall into tribal hands were likely to be held for ransom and, although often roughly treated, rarely came to any real harm.[66] However, it was widely believed that Pathans never took prisoners other than Muslims and the threat of being castrated or beheaded was more likely. Indeed, a popular frontier chant of the time cautioned: 'No balls at all; No balls at all; When your engine cuts out you'll have no balls at all.'[67] Describing the state of a British officer's body after a short time in tribal hands, John Masters recalls: 'He had been castrated and flayed, probably whilst still alive and his skin lay pegged out on the rocks not far from camp.'[68] Such a fate was not unusual for government forces.[69] Likewise, 'it was not unknown for a wounded man to be pegged to the ground and his jaws forced open with a piece of wood to prevent him from swallowing. A woman of the clan would then squat over his open mouth until he drowned in her urine.'[70] It was an unwritten rule never to abandon a wounded soldier. Fortunately, there were many well-documented occasions when the tribesmen did not act as expected, which must have been a constant source of comfort to aircrews operating over the harsh frontier:

> In 1920 the group of Mahsud hamlets and fortified *kots* [walled villages] known as Makin was being burnt as a punishment. A *gasht* [armed patrol] of the North Waziristan Militia, under Lieutenant Barlow, was piqueting a hill overlooking the scene. Smoke from the burning [village] obscured the hilltop, and a machine-gun opened up on it, hitting Barlow with several bullets and knocking him down the enemy side of the hill. He came to rest on a ledge beside a badly wounded Mahsud. Their common misfortunes struck some chord between them. Barlow handed his water-bottle to the Mahsud, who took a swig from it and said, 'Our people will be here soon, *Sahib* [a form of address used as a mark of respect], and will kill you if they find you. Roll down under that rock and hide.' Barlow just managed to do so before he passed out; and was eventually rescued.[71]

There were other examples. Due to an unfortunate accident with a box of incendiaries during a bombing flight on 24 January 1923, a Bristol F.2 B from 28 Squadron had to make a forced-landing in tribal territory. Getting well away from the crash site, the aircrew observed the destruction of the aircraft by explosion, before being captured by irate tribesmen. Both airmen were promptly beaten-up and then moved to separate village locations. Each was then roughly bound to prevent escape. Visits by a political representative persuaded the tribesmen to cease tying the pilot, Flying Officer R.M. Foster, and his gunner up each night. Subsequent visits over the coming weeks brought better treatment, with no bad feeling being shown by their captors. On 12 February the aircrew were escorted back to Sorarogha where they were air-lifted back to their squadron.[72] Money was a useful insurance against torture and ransom notes, often referred to as 'ghoolie chits' (because the Urdu word for ball is ghoolie), guaranteeing a payment for a returned aircrew, provided a degree of protection. These documents, printed in Urdu and Pashtu, were carried on the individual or sealed into the side

of the aircraft. The exact amount paid varied according to the condition in which the aircrew returned.[73] Air Chief Marshal Sir David Lee highlights an out of the ordinary example:

> A Flight Lieutenant Anderson from Peshawar crashed heavily in a particularly hostile part of the Tirah one morning and broke his leg. The Afridis who dragged him from the wreckage carried him 70 miles on a string charpoy to Pashawar to claim the reward. It was a terrible journey for a man with a fractured leg and no medical treatment, and so impressed were the tribesmen by the courage he displayed that they sent a deputation to Peshawar hospital every week until he recovered to enquire about his progress.[74]

While the aircrew faced shared dangers, air gunners – selected tradesmen, mostly fitters and riggers who volunteered and were then selected for the additional flying duty on a part-time basis – endured some unique ergonomic challenges. Due to the rotating Lewis gun ring mountings which formed the top of the rear cockpit, the back seat was a particularly uncomfortable and cramped place. Painful knocks from the many metal projections were common. Moreover, air gunners had to endure many long and wearisome hours on reconnaissance flights with no form of seat, less a small tip-up flap, constantly hoping that the pilot might have a message to pass to alleviate the boredom. Furthermore, standing up in bumpy conditions and hurricane-force winds, attached to the aircraft only via a thin wire cable, was both tiring and risky. However, there were more significant challenges for air gunners:

> During one of the afternoon attacks on the 17th May [1930], Flying Officer P. W. A. Stroud, with No. 364367, A. C. 1. Wiltshire, C.S., as air gunner, descended to a low altitude [600 feet] in order to use his rear gun effectively, and was shot from the ground and died almost immediately. The air gunner took over control of the aircraft and flew it back to the aerodrome [at Risalpur], but crashed on landing and received injuries from which he died.[75]

It is likely that Wiltshire immediately clipped an emergency 'stick' into the flying controls, where they passed through the rear cockpit, and eased the aircraft away from further danger. In an emergency, this rudimentary control allowed a competent gunner to fly the aeroplane back to base employing the auxiliary throttle, but without the benefit of a duplicate rudder control. It was good practice to allow air gunners to fly Wapitis in this way from time-to-time to allow them to gain a basic level of flying competence. 'Wiltshire's courageous act was officially recognised by a near-unique posthumous promotion to the rank of Corporal – an 'award' which may seem curious to any present-day airman but indicative of the esteem and authority enjoyed by a junior non-commissioned officer in that period.'[76] However, pilots were not immune from painful knocks in the cockpit. Air Commodore Tindal Carill-Worsley recalls:

> One occupational hazard for pilots in those times, especially new ones, was the danger of getting a good wallop on the head from the Lewis gun as the gunner decided to move it from side to side, via a forward arc instead of towards the rear. When doing high-

> level, as opposed to dive-bombing, the air gunner did the bomb-aiming, using the High Altitude Drift sight clamped alongside the fuselage. To do this he had to lean out over the side and, since there was no intercom, he 'requested' alterations of course by reaching over and thumping the pilot on the appropriate shoulder – the only legitimate opportunity for an airman, except in certain sporting activities, to 'bash' his superior officer …![77]

Perhaps unsurprisingly, in such an extreme environment, various forms of mental breakdown were common. The chain of command was always on the lookout for withdrawn or uncommunicative aircrews. Unless addressed early and sympathetically, these could result in a fear or an extreme dislike of flying. Air Chief Marshal Sir David Lee highlights one case of a complete mental breakdown after a mysterious morning crash:

> … it was perfectly clear that George's mind was unhinged, and the cause of the strange crash that morning was no longer a mystery … George recovered after a few weeks in the BMH [British Military Hospital] sufficiently to be invalided home by hospital ship and he subsequently returned to normal and remained in the RAF for a time, but not to fly. Eventually I believe he retired voluntarily and disappeared into civil life. It was an unhappy incident but it could have had much more tragic consequences.[78]

Even the routine pressure of sitting in a cockpit continuously for three to four hours in long sorties over columns and convoys placed considerable stress on the aircrew, especially in bumpy conditions or the intense heat of the summer. By the end of April, midday temperatures were creeping up to the 100° mark. By mid May, it was approaching 110° and in June temperatures routinely reached 120°. Such was the summer heat – equal almost to that of the Punjab – that even the irritating frontier mosquitoes died. A flying *topee* (hat) was essential to prevent sunstroke when airborne. 'Flying, even at six o'clock in the morning, was exhausting and uncomfortable and it was hell for the airmen working on the aeroplanes inside the hangers with no cooling of any kind … tempers were short and even after changing clothes as often as five times a day, one was permanently bathed in sweat.'[79] Fatigue was most noticeable when night temperatures prevented adequate restful sleep – generally above 100°. For those not in permanent buildings, all tents utilised for sleeping or working accommodation possessed a double canvas roof and, in addition, a roof of *chapper* matting to help lower temperatures.

Fortunately, there was a degree of respite from the heat and routine dangers of operations. Every airman spent two months each year at Lower Topa, a hill depot situated in the Muree hills above Rawalpindi, 7,200 feet above sea level, between the beginning of May and the end of October. The daily routine was deliberately relaxed and stress-free, with training confined to the morning.[80] Time at Lower Topa did not count as annual leave and few needed any encouragement to relax in the cool mountain air. However, even winter provided little respite from the extremes of temperature on the frontier. Biting ice-cold winds that blew from the snow-covered mountains and sub-zero temperatures made life equally uncomfortable, and

dawn take-offs in freezing conditions were particularly unwelcome. Snow drifts ten to twelve feet high on the Razmak Plain were not uncommon in January. Cockpits became extremely cold at high altitude and aircrew had little option but to wear as much clothing as possible to keep warm and prevent hypothermia. It is little wonder that the seasons were never alluded to on the frontier. Instead, 'the hot weather' (roughly April to October) or 'the cold weather' were terms that denoted the time of year.

Medical officers were constantly on the watch for any mental change in a pilot and gunner and, if observed, a day or two off flying duties usually allowed a complete recovery. Having a medical officer reside in the Officers' Mess, with intimate social contact with the pilots, allowed a rapid diagnosis and immediate treatment.[81] Air gunners and airmen were also kept under close medical observation. With the first aircraft leaving the ground at 05:00 hours and the last one not down routinely until 20:00 hours (unless night operations were occurring), the hours of work for the ground crew were of necessity very long. However, the strain of flying over hostile territory and physical fatigue were only part of the problem. Rabies, malaria, typhoid, sandfly fever and dysentery were all usual and added further to the tension of frontier duty. Although medical services were developing rapidly, the treatment for such common ailments was rudimentary at best.

Moreover, concerted attacks on aerodromes were also common. For example, in July 1919, a daring raid occurred on the landing field at Bannu. On this occasion, the raiders were beaten off with considerable loss and without damage to the aeroplanes.[82] Nonetheless, this was an unsettling experience for those present. In addition, the frontier suffered from regular earthquakes, which were destructive, fear-provoking and disconcerting occurrences.[83] Fortunately, tours of duty began to reduce in length and modern comforts such as large ceiling fans, air conditioning and refrigeration were gradually introduced. Moreover, advances in medical science assisted with prevention and effective treatment of frontier ailments and diseases. Nonetheless, flying over the frontier was always a stressful and anxious undertaking, even when the slow, old two-seater Wapitis and Audaxes – which, usefully, could turn and twist in a small space and fly slowly enough to allow sufficient time for detailed observation of the terrain – were replaced by more modern and faster types.[84]

Conclusion

Few stationed on the frontier rarely met, or even saw, the aircrew that supported them so valiantly on a daily basis. Except for an occasional glimpse of a gauntleted arm, most only recall aircraft slowly circling overhead or diving head-on towards a tribal target with a rattle of machine-gun fire followed by the 'crumph' of a bomb as the explosion echoed off the surrounding hills. Hardly any stopped to think of the hardships and dangers faced by the aircrew on a daily basis, which were often comparable to those operating on the ground. For many airmen, the frontier was a highlight of their careers and lives, never to be repeated, but never to be forgotten. Despite the maze of knife-edge hills, the oppressive furnace-like heat and the ice-cold winds, the constant strain and regular loss of life, this was an experience not

to be missed and one to be proud of. Chaz Bowyer provides an even-handed summary of a posting to a frontier squadron: 'A period of real hardship, deprivation, separation from kith and kin for a majority, yet also years of true comradeship and united purpose which would never be surpassed and rarely equalled in any other facets of Service or civilian life. Service on the Frontier had brought most men into direct contact with the deaths of close friends and acquaintances, often in horrifying circumstances, yet such tragedies had served curiously in binding even tighter the communal spirit of all units.'[85] Nothing ever dampened the cheerfulness and dedication with which the airmen performed every duty allotted to them. It is a very real tribute to the efficiency and professionalism of the service that casualties were so small in such an unforgiving environment and that the RAF were held in such high regard by their land brothers.

Notes

[1] India's North-West Frontier (now modern-day Pakistan) was divided into three areas for the RAF The northern area comprised the region to the north of the Khyber Pass up to the foothills of the Himalayas – referred to as the 'Roof of the World.' The second or central area lay south west of the Khyber Pass roughly between the rivers Kabul and Kurram. This was universally mountainous, criss-crossed by deep valleys and dried up water courses. The third region was the southern area which lay to the south west of Kohat, from the Kurram River down towards Fort Sandeman and Baluchistan. This was dominated by Waziristan, the storm centre of the frontier and stronghold of tribal resistance.

[2] Areas owned by the government, with barracks, military hospitals, clubs and institutes, and rifle ranges and training facilities nearby.

[3] The term used for the Razmak, Wana and Bannu Brigades when engaged in moving about Waziristan. Throughout the year the three Army brigades carried out columns of several days in tribal territory, with the dual purpose of training the troops and showing the flag.

[4] A particularly well-organised and dangerous tribe.

[5] J. Prendergast, *Prender's Progress: A Soldiers Life in India, 1931-7* (London: Cassell Ltd., 1979), 88.

[6] H.L. Davies, "Military Intelligence in Tribal Warfare on The North-West Frontier of India," *Journal of the United Services Institution of India*, vol. LXIII, no. 272 (July 1933), 289-291.

[7] J.B. Glubb, *War in the Desert: An RAF Frontier Campaign*, (London: Hodder and Stoughton, 1960), 51-66.

[8] G. Moore, *Just As Good As The Rest* (Bedford: Jaycopy Ltd., 1979), 23.

[9] H. le M. Brock, "Air Operations on the NWF 1930," *Journal of the Royal Central Asian Society*, vol. 19 (1932), 42.

[10] P. Chetwode, "The Indian Army," *The Journal of the Royal United Service Institution*, vol. LXXXII, no. 525 (1937), 12.

[11] For example: Peshawar to Chitral is 130 miles; Peshawar to Razmak is 135 miles; Peshawar to Wana is 165 miles; and Chitral to Wana is 280 miles.

[12] Every scout patrol, known as a *gasht*, carried with it a basket of four carrier pigeons, trained to home to the area headquarters. In the event of a need for help or an ammunition drop, pigeons were always released in pairs, each one with the same message in the tube attached

to its leg. The tribesmen's bullets might kill one with a lucky volley, more likely that a hawk might get one, but the other one at least would get through.

[13] R. Lee, *Never Stop The Engine When It's Hot* (London: Thomas Harmsworth Publishing, 1983), 145.

[14] Sir John Slessor recalls: 'It may be hard to believe, but on one occasion during a small battle in Waziristan when I, as Air Force Commander, was requested by the Army Commander to bomb a village from which heavy fire was holding up our advance, and had regretfully to refer him to the instructions of the Government of India on this point, I was told, "Oh come on, that will be all right, we'll say we shelled it!" That indeed would have been all right and in accordance with the extraordinary rules of the game.' J. Slessor, *The Central Blue: Recollections and Reflections* (London: Cassell & Coy Ltd., 1956), 66.

[15] M. van Creveld, *The Age of Airpower* (New York: PublicAffairs, 2011), 344.

[16] N.H. Bottomley, "The Work of the Royal Air Force on the North-West Frontier," *Journal of the Royal United Services Institute 193* (1939), 773.

[17] General Sir Andrew Skeen notes: 'Their power of moving concealed is outstanding not only in moving from cover to cover, but in slipping from light to shadow, and background to background. It has to be seen to be believed.' A. Skeen, *Passing It On: Short Talks on Tribal Fighting on the North-West Frontier of India* (Aldershot: Gale & Polden, Ltd., 1932), 3.

[18] 'Mauser,' "A Forgotten Frontier Force," *English Review*, no. 52 (1931): 71.

[19] F. Leeson, *Frontier Legion: With the Khassadars of North Waziristan* (Ferring: Selwood Printing Ltd., 2003), 195.

[20] IOL MSS EUR D 944 (Mitchell Collection) "Years That Have Ended," 123-7.

[21] C.C. Trench, *The Frontier Scouts* (London: Jonathan Cape, 1985), 135.

[22] H. de Watteville, *Waziristan*, 1919-1920 (London: Constable & Co. Ltd, 1925), 200.

[23] R. Lee, *Never Stop The Engine When It's Hot*, 59.

[24] In addition to the 'X V T Close Support Code' there were a number of other ground strip signs used only by headquarters controlling sorties. These included: 'KT' which indicated that a withdrawal is about to, or has commenced; 'CI' informed the pilot that he was no longer required and could return to base; 'F' made clear that a message had been found or provided a 'yes' in answer to a question dropped by a pilot; and 'N' highlighted that a message had not been found or 'no.'

[25] B. Robson, *Crisis on the Frontier* (London: Spellmount, 2004), 260.

[26] G. Morley-Mower, *Flying Blind: A Memoir of Biplane Flying Over Waziristan in the Last Days of British Rule in India* (New Mexico: Yucca Tree Press, 2000), 140.

[27] H.R.C. Pettigrew, *Frontier Scouts* (Selsey, Sussex: privately printed, 1964), 89-90. Reverting to the basic 'T' between characters, and using the 1918 code, the name sequence would have read: 89 (89 was the 'call up' combination) T 27 T 12 T 16 T 79 T 46 T 16 T 37 T 38 T 6789.

[28] Practically every adult male possessed a rifle and most carried long barreled weapons from boyhood.

[29] W.J. Cumming (Ed J Stewart), *Frontier Fighters: On Active Service in Waziristan* (Barnsley: Pen & Sword, 2010), 61.

[30] 'V.B.L.' attacks were made parallel to and not directly over a position. At times mistakes were

made, especially by young and inexperienced pilots. The greatest fault was an over-eagerness to take action. Instead of searching carefully for the enemy and making certain that no mistakes had been made on the ground, pilots were known to attack immediately and bombs were dropped in error on government forces.

[31] G.M. Nocker, "Hawai Jehaz," *The Army Quarterly*, vol. XCIX, no. 1 (October 1969), 114.

[32] Ibid., 116.

[33] C.H.T. MacFetridge and J.P. Warren (Eds.), *Tales of the Mountain Gunners* (Edinburgh: William Blackwood, 1973), 126.

[34] A. Warren, *Waziristan, The Faqir of Ipi, and the Indian Army* (Oxford: Oxford University Press, 2000), 157.

[35] A brutal, treacherous religious man – even by Pathan standards – who for 11 years before India's independence in 1947 confounded and eluded British forces on the frontier, gaining the notoriety of a most implacable enemy.

[36] "Waziristan Operations," *The Times*, 10 April 1939.

[37] L. Gordon, "13 (Dardoni) Mountain Battery on the North West Frontier – 1940)," *British Army Review*, no. 144 (Spring 2008), 40.

[38] W.J. Cumming, *Frontier Fighters*, 77-78.

[39] G.M. Nocker, "Hawai Jehaz," 122.

[40] C. Bowyer, *RAF Operations 1918-38* (London: William Kimber, 1988), 168.

[41] H.C. Wylly, *The Green Howards in the Great War* (London: Butler and Tanner Ltd., 1926), 26.

[42] C. Bowyer, *RAF Operations 1918-38*, 169.

[43] H.R.C. Pettigrew, *Frontier Scouts*, 19.

[44] R. Lee, *Never Stop The Engine When It's Hot*, 114.

[45] C.B.E. Burt-Andrews, "Guarding the Mountain Wall: Air-power on the Northwest Frontier of India," 216.

[46] There were also practical restrictions on flying. For example, in 1939 pilots were only allowed to fly a maximum of 12 hours a month on the frontier. This was due to the tense political situation in Europe and the government order to ration aviation fuel.

[47] R. Lee, *Never Stop The Engine When It's Hot*, 72.

[48] Ibid., 69.

[49] A number of aircraft were fitted with cameras so that photographs of any unusual ground disturbance or damage to the landing sites could be taken for intelligence or maintenance purposes.

[50] A 'bag and rope' consisted of 20 feet of rope with a canvas bag at one end which fitted neatly over the propeller tip. Two or more trained airmen grasped the rope and, on the pilot's signal, rushed away from the aircraft, hopefully starting the engine.

[51] The problem of evaporation, even from sealed drums, was serious on all landing grounds, particularly during hot weather. The Public Works Department (PWD) was responsible for positioning all fuel stocks and changing them over at the six-month point, when the aviation fuel would deteriorate and had to be down-graded and diluted for other uses.

[52] R. Lee, *Never Stop The Engine When It's Hot*, 50-51.

[53] Ibid., 58.

[54] G. Morley-Mower, *Flying Blind*, 146.
[55] H.R.C. Pettigrew, *Frontier Scouts*, 96.
[56] This included: the time his 'sortie' begins and ends; where the army is going, and where he may expect to find column headquarters, piquet positions and advanced and rear guards; information about the enemy and any special areas to watch; and 'call sign' and signals details.
[57] W.I. Moberly, *Raj and Post-Raj: Low Level Reminiscence of Life – Two Armies* (Edinburgh: Pentland Press, 1985), 72.
[58] W.J. Cumming (Ed J Stewart), *Frontier Fighters*, 60.
[59] H.R.C. Pettigrew, *Frontier Scouts*, 96.
[60] R. Lee, *Never Stop The Engine When It's Hot*, 67.
[61] W.J. Cumming, *Frontier Fighters*, 85.
[62] R. Lee, *Never Stop The Engine When It's Hot*, 63.
[63] Ibid., 216.
[64] Of note, the first general use parachutes arrived in India in late 1928. These consisted of Irvin seat packs for the pilot and the 'lap type' for the gunner.
[65] G.M. Knocker, "Hawai Jehaz," 119.
[66] Sir John Slessor notes: 'It is, I think, significant here that though through the years a number of crews were shot down or force-landed during operations (and we made it a principle never to relax pressure just because we had hostages in enemy hands), as far as I know there was no case when they were killed or even seriously ill-treated.' J. Slessor, *The Central Blue*, 67-8.
[67] G. Morley-Mower, *Flying Blind*, 40.
[68] J. Masters, *Bugles and a Tiger* (London: Cassell & Co., 1956), 73.
[69] G. Morley-Mower, *Flying Blind*, 40.
[70] D.S. Richards, *The Savage Frontier: A History of the Anglo-Afghan Wars* (London: Pan Books, 2003), 182.
[71] C.C. Trench, *The Frontier Scouts*, 146.
[72] C. Bowyer, *RAF Operations 1918-38*, 168.
[73] The notice carried stated: 'The bearer of this letter is on official duty with the air force and is under the protection of the Indian government. He should be well treated and be immediately and safely brought to the nearest government post. A reward is offered if this is done. The government will severely punish any attempt to harm him.' This was signed by the Governor of The North-West Frontier Province.
[74] R. Lee, *Never Stop The Engine When It's Hot*, 47.
[75] Despatch by H.E. Field Marshal Sir William R. Birdwood, Bart., GCB, GCSI, GCMG, CIE, DSO, Commander-in-Chief in India, on the Disturbances on the North-West Frontier of India from 23rd April to 12th September, 1930, 8.
[76] C. Bowyer, *RAF Operations* 1918-38, 201.
[77] Ibid., 188.
[78] R. Lee, *Never Stop The Engine When It's Hot*, 222-223.
[79] Ibid., 311.
[80] While there, the airmen attended ground training lectures, carried out their annual rifle tests, some drill and played sport.

[81] Each of the four Army co-operation squadrons (Nos. 5, 20, 28 & 31 Squadrons) had a Medical Officer on their permanent establishment – although, interestingly, the four bomber units (Nos. 11, 27, 39 and 60 Squadrons) did not.
[82] H. de Watteville, *Waziristan, 1919-1920*, 59.
[83] On Friday, 31 May 1935, a major earthquake, followed by a series of tremors in the early hours of the morning, struck Quetta. Home to Nos. 5 and 31 Squadrons, 55 airmen and 66 Indians were killed, while countless others sustained injuries. All RAF buildings, less the aircraft hangers, collapsed and the majority of married quarters were destroyed or ruined. Only three of 31 Squadron's aircraft were undamaged, while all of 5 Squadron's machines were out of commission.
[84] F. Leeson, *Frontier Legion*, 92.
[85] C. Bowyer, *RAF Operations 1918-38*, 235.