

The Story of MiGs: Is the Machine at Fault or Somewhere Else?

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With increasing number of MiG fighter aircraft being destroyed in crashes there is growing rancour against the MiG aircraft leading to an accusatory tenor in the criticism. Off late, the aircraft has been labelled as a “flying coffin” and a “violator of the fundamental right to life”. Sanjeet Singh Kaila’s (a serving officer in the Indian Air Force who moved to court against the aircraft) decision to move to court against the aircraft may come across as justified but latent in his judicial quest lies much larger renditions about assemblage, retrofitting, up gradation, maintenance, pilot training and above all rules of operations of the MiG fighter aircraft. While the fatal crash killing the pilot of the MiG-21 Bison fighter aircraft of the Indian Air Force at Uttarlai airbase in Rajasthan's Barmer district on July 15 may have been the immediate spark behind such an incensed reaction against the aircraft but do these accusations hold?

In so far as the statistics of the MiG crashes are concerned, MiG crash has become a reprise. The accretion of crashes over the years has left the IAF with just over 400 aircraft from an initial 900 odd number. In other words, a staggering, more than half of the MiG fleet has been lost to crashes. This year alone there have six MiG crashes. In the last three years, the IAF has lost 31 fighter planes, including 14 MiG-21 fighters, eight MiG-27s, four Su-30MKi planes, two each Jaguars and Mirage 200 and one MiG-29. Seven pilots lost their life in these crashes, out of which six lost their lives with the crash of MiG-21 planes. Apart from the loss of pilots as trained personnel there are civilians who have been the inadvertent casualties because of the supersonic lethality of the fighter jets going awry. Altogether, six civilians have lost their lives and 39 civilian properties were damaged, according to defence ministry records.

The last notable operational-high for the MiG was the 1971 Indo-Pakistan war when it had completely overwhelmed the opposition’s air power. By the time the 1971 war ended, the IAF MiG-21s had claimed four PAF F-104s, two PAF F.6, one PAF North American F-86 Sabre and one PAF Lockheed C-130 Hercules, demonstrating a clear operational upper hand, both in fire power and manoeuvrability.

A layman’s understanding of the operational complexity of a fighter aircraft is thrice removed from reality and therefore, the inferences drawn on the basis of a crash or a series of them, amounts to being nothing more than a factoid. There can be innumerable reasons behind a fighter aircraft’s crash. Prominent among them are operational failure (engine failures etc), bird hits, season, place and time of flying and lack of concentration by the pilots. The first reason is the only reason which should hold the machine

responsible for a crash, if at all. Because here too there are larger ramifications, of how well the aircraft was assembled, involved. This returns the suspicion squarely on human follies. In the case of MiGs, it is the HAL in Bangalore where the fighter aircraft is assembled. True, a machine cannot be perfect but how well we manufacture/assemble it can have a significant bearing on its operational efficiency and hence reduce the risks while flying the aircraft.

The second reason, a bird hit, vindicates as much man as the machine. The flying lingo refers to it as plain bad luck. Two factors play important role in a bird hit; the point of impact of the bird with the aircraft and the size of the bird. If the point of impact is near the engine or the size of the bird large, the impact more often than not is fatal. Although to stop a bird from hitting a fighter aircraft flying at around 800mph is near impossible but there are human sciences working towards it. The division of the IAF responsible for flying works with ornithologists, entomologists and geologists to ensure a safe time in the year for flying when bird migrations and insects which attract birds are at its lowest. The geologists study things like the permissible size of the grass over the flying terrain which should render the insects invisible for the birds. The less risky seasons for flying the aircraft are closely associated with above mentioned issues.

The third reason, place and time for flying a fighter aircraft, is a huge determinant of the possibility for the aircraft to meet with an accident. A lot is contingent on the nature of topography of the flying area of the fighter aircraft like MiGs, in fact flying sorties of fighter aircraft are often preceded by topographical studies of the areas involved. Consider for instance an area like Uttarlai in Rajasthan (the site for the latest MiG crash). The area lies between unending swathes of sand with minimal and sporadic habitation. While lack of distinct topography and minimum habitation may be ideal for a crash-prone fighter aircraft like the MiG (as they would cause less damage and almost no loss of life) but at times the same topographical features can work against them. Habitations, clusters, lights during night and other geographical features act as 'landmarks' for pilots. The lack of many features below them has a dual risk. First that fighter aircraft pilots, who mostly rely to fly on their retentive memory constitutive of major landmarks, a thorough study of the topography of the area and above all their sense of timing, will find it difficult to place their sorties within the predetermined scopes of location and speed. Any minor fluctuation in either location or the speed of a fighter aircraft is enough to cause colossal damage. Second, at mind boggling speeds which exceed the speed of sound together with a 360 degree manoeuvrability in air, the pilots in the MiG sometimes lose their top-and-bottom sense. Especially in areas like Rajasthan where there are vast stretches without habitation, no landmarks and almost no light (as in the deserts), pilots can hardly differentiate between the sky and the ground at such high speeds, especially if there are no stars.

Here it is also important to talk about the concentration of the pilots in the fighter aircraft and his sense of timing. There has to be an impeccable coordination between the two right from the moment the pilot takes off the aircraft to the point of his return and stop. A slight incoherence between the two could lead to a crash especially during the basic fighting manoeuvres done by the fighter aircraft. Rising after a nose dive is the

most critical fighting manoeuvre of a fighter aircraft when the same is at its most vulnerable. A micro-second of lapse in the driver's concentration, a minute topographical aberration or the smallest stimulus-response mismatch can crash the fighter aircraft.

The incredible machine which many consider is the piece de resistance of the IAF appears to be in the dock even as it is on its legs. Dubbed as a "flying coffin" and an aircraft which "violates the fundamental right to life", the controversial fighter aircraft raises more questions than it answers. The sheer number of crashes, loss of lives, trained pilots and billions of dollars that come down crashing with every MiG crash make it very convenient for us to point fingers at the machine but is the machine really mean?

A hugely delayed indigenous fighter aircraft project, LCA Tejas and an MMRCA deal marred by bureaucratic bottlenecks have necessitated the extension of the MiG aircraft in the IAF. The aircraft appears, by all means, to have approached its shelf-life. A teleological perspective would put forward the argument that since MiGs do not have any 'purpose' as of now, they should be phased out. This could be an option as a depletion in the operational capabilities of the IAF would be a catalyst to expedite the indigenous Tejas programme.

Since 1964 MiGs have been a reliable machine with the IAF and several have undergone up gradation. Those that have not are slated to be phased out by 2018. The MoD has placed its trust with the upgraded versions of MiG-21s and MiG-27s and they are going to continue being operational for now. Statistics show that till the year 2010 the frequency of MiG crashes was really low. Till 2010, only four MiG-27s had crashed but crashes since then have increased leaps and bounds. Some analysts argue that the up gradation of the MiGs have led to compromises with the aero dynamical features of the fighter aircraft leading to increased crashes. While there might be some truth in that assessment the simple fact is that we think we have extended the shelf-life of an aircraft by retrofitting but have we? Why has an aircraft which was an envious possession of the IAF in the 1970s and 1980s and that much less prone to accidents then has suddenly found the trend to hit the ground? Why is it that current military usage of MiGs have been restricted to only three countries; India, Sri Lanka and Kazakhstan?

Easy answers to these question would put the MiG in the dock, as has the popular perception, implying negligence of the pilots and the assemblers of the aircraft. But the number of crashes and the frequency of them simply refute this argument. The fact is that until we replace the ageing fleet of MiGs, chickens will come home to the roost. Its decision-making, why blame the machine?

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