

Yak fuel problem remains a mystery



The Russian Yak 52 is now a popular 'warbird'. It is a design that started towards the end of the Second World War and can still be had new, ex-factory!

THE Yak 52 was refuelled, before departing on a planned flight to Carlisle Airport in formation with another Yak aircraft, routing via the Lake District.

The aircraft both took off, but the passenger in the accident aircraft noticed fuel escaping from the left wing and advised the pilot, who decided to land immediately. He parked, shutdown, inspected the aircraft and found that the fuel cap had been incorrectly fitted, so he re-secured it. He took off again, contacted the first aircraft and planned a rendezvous at Penrith and continued towards Carlisle in formation. Five miles south of Carlisle the accident aircraft experienced a loss of engine power. The pilot contacted the other aircraft and its pilot relayed a PAN call to Carlisle, later upgrading this to a MAYDAY.

The ailing engine continued to run at idle power. The pilot tried a number of methods to restore normal cruise power and handed control to the rear seat passenger, an experienced pilot who had never flown a Yak. The passenger selected a field for a forced landing and positioned the aircraft for an approach. The pilot resumed control, found the approach angle steep and the rate of descent high. He deployed the landing gear in an attempt to absorb energy on touchdown. The aircraft hit the ground hard in a right wing low attitude, with the landing gear only partially deployed.

The outside air temperature at Carlisle Airport was 18°C and the dewpoint 7°C. A chart showing the probability of induction icing indicated that there could have been a moderate risk of icing at cruise power in these conditions. An overhauled engine had been fitted to the aircraft and the aircraft had flown four hours on it.

The Pilot's Operating Handbook for the Yak 52 aircraft states that, in the event of a forced landing, the wheels should remain up. The landing gear is semi-retractable and will thus prevent major damage to the airframe. Both the pilot and the passenger later commented that the rate of descent of the aircraft in the gliding configuration was very high and a steep nose down attitude was required to maintain speed. The Engine Failure Checklist Card notes that the target approach speed is 160 km/h with full flap or with flap up and that 'at low speeds, the rate of descent is very high.'

A loss-adjuster inspected the fuel system after recovery of the aircraft, noting that both tanks held significant quantities of fuel and that fuel was in the system, through to the carburettor. The Yak fuel system has two wing tanks feeding to a collector tank, neither of which can be individually selected. Attention was drawn to a rumoured phenomenon with this type of Yak, in which fuel can be preferentially drawn from one of the tanks, causing it to drain more rapidly than the other. Anecdotal evidence also held that, after a period of standing and despite non-return valves in the system, the level in the tanks could equalise, disguising the possible reason for a loss of power.