

Goacher M Rans S10, G-BTJX

AAIB Bulletin No: 10/99 **Ref:** EW/G99/04/29 **Category:** 1.3

Aircraft Type and Registration: Goacher M Rans S10, G-BTJX

No & Type of Engines: 1 Rotax 582 piston engine

Year of Manufacture: 1999

Date & Time (UTC): 28th April 1999 at 1515 hrs

Location: Mosley Farm, Annesley, Nottinghamshire

Type of Flight: Private

Persons on Board: Crew - 1 - Passengers - None

Injuries: Crew - None - Passengers - N/A

Nature of Damage: Damage to right hand gear and right wing tip

Commander's Licence: Private Pilot's Licence

Commander's Age: 33 years

Commander's Flying Experience: 118 hours (of which 53 were on type)
Last 90 days - 49 hours
Last 28 days - 23 hours

Information Source: Aircraft Accident Report Form submitted by the pilot

History of the flight

The aircraft was returning from Welshpool to its home base at South Scarf, near Newark, when the engine stopped without warning as the aircraft was flying over Annesley village, at a height of 3,300 feet. The engine indications had been normal prior to the loss of power, and fuel was available in both tanks. The pilot conducted a forced landing into a farm field, however the aircraft decelerated rapidly due to the soft ground and the right main landing gear suffered severe distortion, causing the right wing tip to contact the ground. The pilot's four point safety harness held and he was uninjured.

Examination of the engine

It was subsequently found that one of the engine's two pistons had seized, apparently due to a lack of oil. Approximately 0.75 pints of two-stroke oil remained in the associated reservoir in the engine compartment, which surprised the pilot since he had not been aware that any of the oil reservoir capacity was unusable.

Rans Operational Alert No 105

The pilot was also unaware of a Rans 'Operational Alert', No 105 of 21 September 1992, applicable to all oil injected Rotax 582 powered Rans aircraft and which noted that compliance was 'mandatory' and stated the following:

It has been determined that an operational limitation must be placed on 582 powered aircraft. In a sustained steep climb of 16° and above, with the oil level at or below 1/2, oil starvation may result.

We recommend filling the oil tank full before take off, and to be aware of this problem in a steep climb or go-around.

At the end of a long flight do not make sustained climbs at angles above 16°. One method of compliance to repair this problem would be to raise the tank 1 1/2 ins higher than the current level.

A new oil tank mount 1 1/2 ins taller is available.

Discussion

The aircraft had not been climbing at the time of the engine seizure, however in view of the above information it is possible that a period of flying 'out of balance' (the aircraft was not equipped with a slip indicator) may have caused the outlet pipe in the oil reservoir to have become uncovered when the contents became low.

The pilot had assumed that a full oil tank would last at least as long as a full fuel load, ie typically about three hours. The average fuel/oil consumption ratio of 60:1 should ensure that the oil contents of the approximately 2.5 quart reservoir should normally last for at least some 31 gallons of fuel usage, which was more than twice the fuel tanks' capacity of 15 gallons. This raised the question of whether the oil metering system had been correctly set. This was not a system that could be readily adjusted by the pilot, since it was dependant on the throttle cables between the carburettors and the oil pump having been accurately rigged. The pilot also pointed out that although there was a fuel gauge in the cockpit, there was no means of assessing the oil reservoir contents in flight. As a result of the accident, he resolved to ensure that the oil reservoir was topped up prior to every flight, and to monitor the oil consumption in order to establish whether the engine was running 'oil-rich'.

Safety action

The Popular Flying Association (PFA), which issued the aircraft's Permit to Fly, did have a copy of the Rans Operational Alert No 105 on their files. At the time of its issue, copies of this Alert were reportedly sent to all Rans S10 constructors, which would have included the builder of G-BTJX. However it appeared that this particular copy of the Alert was not subsequently passed on to the current owner of this aircraft. The pilot stated that he had asked the PFA for copies of all relevant bulletins after he had purchased the aircraft, but apparently Operational Alert No 105 was not included in the associated documentation which he subsequently received.

The PFA believed that this Rans Operational Alert affected only some 4 or 5 Rans aircraft in the UK, and has written to their owners instructing them to placard their aircraft with the limitations stated in this Alert.