CEA DR400/2+2, G-BAGS

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Aircraft Type and Registration:	CEA DR400/2+2, G-BAGS
No & Type of Engines:	1 Lycoming O-235-H2C piston engine
Year of Manufacture:	1973
Date & Time (UTC):	3 September 2000 at 1130 hrs
Location:	Calne, near Devizes, Wiltshire
Type of Flight:	Private
Persons on Board:	Crew - 1 - Passengers - 1
Injuries:	Crew - None - Passengers - None
Nature of Damage:	Damage to nose landing gear and propeller
Commander's Licence:	Private Pilot's Licence
Commander's Age:	52 years
Commander's Flying Experience:	597 hours (all on type) Last 90 days - 13 hours Last 28 days - 4 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

History of the flight

The pilot of the aircraft, together with a neighbour, decided to conduct a flight over their home village with the intention of taking photographs. After satisfactory completion of all the pre-flight checks, the aircraft took off from Draycott Farm airstrip and the pilot established radio contact with Lyneham Control. The aircraft flew over the village at around 1,500 feet agl and entered a left turn in order to reposition over the village. However, on completing the left turn the pilot attempted to roll the aircraft level, but found that the control column would not move beyond the central position. The application of increased force failed to free the restriction, and a brief increase in the left bank angle before making another attempt to roll level was similarly ineffective. The pilot transmitted a Mayday message to Lyneham ATC and continued to circle until he observed a large field to the west that he considered he would reach if he started his descent whilst on a northerly heading. During the final approach he turned off the fuel and master switch, and lowered full flap. The control column still could not be moved beyond its central position, although some alleviation was provided by use of the rudder.

The aircraft touched down in a left wing low attitude while drifting to the right. The nose landing gear sheared off and the aircraft came to a rapid halt. Neither occupant was injured and as soon as they had vacated the aircraft, the pilot telephoned Lyneham to report that they were safe.

Examination of the aircraft

The field in which the aircraft had landed was owned by another of the pilot's neighbours who facilitated recovery of the aircraft, by an aircraft engineering company, to accommodation on his farm. During this process it was noted that the ailerons apparently functioned normally. However, it was later noted that there was evidence of fouling between a bolt connecting the right hand aileron horn to its associated operating rod in the wing, and a glassfibre shroud attached to the wing where the operating rod emerged from it. This can be seen in the photographs at Figures 1 and 2. Contact between the bolt and the shroud occurred with the aileron in a near - neutral position and was such that upward movement was impeded, which appeared to correspond with the reported control symptoms. The shroud was attached to the wing upper surface screws which passed through a flange around its base. It was noted that the rear of the shroud was only partially secured because the rear inboard corner of the flange had broken off under the head of the screw.

However, a member of the aircraft recovery organisation (which had not been associated with the maintenance of the aircraft) subsequently stated that he had caused this damage whilst he was investigating the flying controls for potential restrictions after this incident. Although the aileron system was inspected, no other reason for the restriction was found. Notwithstanding this, the commander noted that he had felt inhibited from applying excessive force after encountering the restriction, for fear of breaking a control cable. It was thus possible that an in-flight contact occurred between the bolt and the shroud, with little discernible damage resulting to the latter; the observed damage to the shroud flange could therefore have been caused during the subsequent investigation, as described by the member of the recovery team.

A review of the aircraft log book revealed that no recent maintenance had been conducted on the aileron system other than a scheduled 50 hour inspection on 21 July, some 30 flying hours prior to the accident flight. Thus if the control restriction was caused in the manner described above, the aircraft must have taken off with some form of distortion or damage in the region of this shroud which was not observed during the pilot's pre-flight inspection and did not impede the aileron controls movement during his pre-departure 'full-and-free' checks.

(Photo: LAD Aviation Ltd)

Figure 1. View of right hand aileron and wing

(Photo: LAD Aviation Ltd)

FIGURE 2. Evidence of contact between bolt tail and inboard edge of shroud.

Note broken corner of shroud under screw head.