

AAIB Bulletin No: 5/93

Ref: EW/G93/01/05

Category: 1c

Aircraft Type and Registration: Pitts S-1D Special, G-BIRD

No & Type of Engines: 1 Lycoming IO-360-B4A piston engine

Year of Manufacture: 1978

Date & Time (UTC): 9 January 1993 at 1530 hrs

Location: Cranfield Aerodrome, Bedfordshire

Type of Flight: Private

Persons on Board: Crew - 1 Passengers - None

Injuries: Crew - None Passengers - N/A

Nature of Damage: Left tailplane forward support tube broken

Commander's Licence: Private Pilot's Licence

Commander's Age: 36 years

Commander's Flying Experience: 1,220 hours (of which 730 were on type)
Last 90 days - 40 hours
Last 28 days - 10 hours

Information Source: Aircraft Accident Report Form submitted by the pilot

G-BIRD was operated by a professional display pilot, having been acquired from another similar operator. The pilot had taken-off from Cranfield to practice aerobatics over the airfield and several manoeuvres had been flown. However as the aircraft was flying straight and level, positioning for a display sequence, the pilot heard a loud noise as if something had struck the left side of the fuselage. Looking back he could see the left tailplane leading edge was moving up and down and laterally in and out and he felt the stick forces were heavy and restricted in pitch.

He sideslipped the aircraft to the right in a shallow descending turn from 650 feet onto the light landing grass area on the airfield without further damage.

Upon inspection it was found that the front horizontal stabiliser support tube had failed on the left side where the attachment bushes were welded to the support tube. It was fortunate that the separation had occurred just inboard of the plywood fuselage fairing since this was apparently all that had located the leading edge and prevented catastrophic failure. The Pitts part number of the affected component was 1-210-126 but since G-BIRD had been built from plans it could not be determined whether it was of

their manufacture. Metallurgical examination showed that the part had failed in fatigue originating from the weld which showed evidence of poor penetration. Further examination at the equivalent location on the right side revealed a similar fatigue crack had initiated. The aircraft had flown some 810 flying hours.

Pitts Service Bulletin No.14 dated 15 May 1980 advised owners of factory-built aircraft, serial numbers 1-001 through 1-0060, that they should replace the earlier part number quoted above with a strengthened member P.No. 1-210-166 'at the owner's earliest convenience'. The Bulletin cited several instances of failure on homebuilt aircraft but was produced following discovery of a crack on a factory-built aircraft. It was understood that G-BIRD had been regularly inspected in this area using a torch and mirror through an inspection patch in the fuselage but this had clearly failed to pick up the cracking.

The following recommendation has been made to the CAA:-

93-36 The CAA/PFA should require all owners of all homebuilt Pitts Special aircraft and all owners of factory-built aircraft affected by Pitts Service Bulletin No.14 to inspect the tailplane support tubes of their aircraft in order to determine its modification state. Where the earlier standard of tube is found, it should be replaced with the later standard immediately. (Issued 19 April 1993)