

Aircraft type and registration: Steen Skybolt Home-build G-BKXB

No & Type of engines: 1 Lycoming O-360-A1A piston engine

Year of Manufacture: 1986

Date and time (UTC): 17 May 1987 at approx 1059 hrs

Location: Brunton Aerodrome, Northumberland

Type of flight: Private

Persons on board: Crew — 1 Passengers — 1

Injuries: Crew — 1 (fatal) Passengers — 1 (fatal)

Nature of damage: Aircraft destroyed

Commander's Licence: Private Pilot's Licence

Commander's Age: 31 years

Commander's Total Flying Experience: Not known — believed to be about 200 hours of which 27 hours were on type

Information Source: AAIB Field Investigation

The aircraft was a Steen Skybolt which had been constructed from a 'home-build' kit by the pilot/owner. It was a single engined biplane, with two cockpits in tandem and with full flying controls in each cockpit. The aircraft was normally flown from the rear cockpit which was fitted with basic flight instruments — there were no flight instruments in the front cockpit. The aircraft had limited storage space which consisted of a small locker situated immediately aft of the rear cockpit in the top section of the fuselage.

On 16 May 1987 the pilot/owner accompanied by a colleague as passenger flew the aircraft from the Royal Air Force station at Leuchars, Scotland, to Brunton aerodrome. The aircraft was parked over night at Brunton aerodrome in an area used by a local parachute club. At about 0930 hrs on 17 May 1987, a CAA Licenced Engineer carried out an inspection of the aircraft, at the pilot's request, for the purpose of renewing the Permit to Fly, which was due to expire on 2 June 1987. The inspection was satisfactory. The pilot then loaded 5 gallons of motor fuel into the aircraft and carried out 2 flights in the local area, carrying a passenger on each flight. The aircraft appears to have operated satisfactorily on these flights and there were no reports of any unserviceability. Thereafter the pilot loaded a further 5 gallons of motor fuel — which had reportedly been purchased from a local garage — and the aircraft was prepared for the flight back to Leuchars RAF station.

Prior to departure the pilot and passenger were observed to be stowing various items within the aircraft. These included an empty 5 gallon fuel container and re-fuelling funnel and two haversack type holdalls. The plastic fuel container and re-fuelling funnel were stowed on the fuselage floor behind the rear cockpit and beneath the small luggage locker. They were fixed in position by adhesive tape. One of the holdalls was placed in the luggage locker. It was not

possible to positively establish where the second holdall was stowed, however, due to its reported size and the limited cockpit space, it is considered that it can only have been carried by the front seat passenger holding it on his lap.

At about 1045 hrs the pilot and passenger boarded the aircraft. Engine start appeared to be normal and the aircraft was observed to take off from runway 20 at Brunton aerodrome at about 1055 hrs. After take off the aircraft made a left hand orbit of the aerodrome before completing a low fly past alongside the area reserved for the parachute club. The aircraft was next observed to enter a climbing turn to the left, but instead of levelling onto the northerly heading that was the required course for Leuchars, it descended and entered a steep low level, left banked turn over Tugall Covert, a wooded area to the north of the aerodrome. During this turn the aircraft's nose dropped significantly and, as the wings were levelled, the aircraft descended and crashed into the trees. Immediately after the impact there was a fierce fire.

Examination of the impact area showed that the aircraft had first contacted the tree tops in an attitude of about 30° nose down, and probably with the wings level. Thereafter successive contacts with tree trunks and branches had caused the aircraft to rotate through 180° so that it came to rest facing back along its original flight path. It was apparent that there had been a fierce fire after the impact and that this had been confined to the immediate cockpit and engine areas. Almost all combustible items had been consumed except the extremities of the wings, nose and tail. Various loose articles consisting of shoes, an oil container and a haversack were found close to the wreckage. None of these items showed any evidence of fire damage and therefore must have been ejected from the aircraft during the impact sequence and before the aircraft finally came to rest and ignited.

An examination of the aircraft's structure and controls revealed no pre-crash defect or failure. The engine was dismantled and again no pre-existing mechanical defect or failure was found which would have caused power interruption or failure. Damage to the propeller showed that it had been rotating at the time of impact, but it was not possible to assess whether the engine had been producing power at that time. An anomaly was found in the engine assembly in that the fuel injector which was fitted to the engine, while of the correct general type, was not of the precise part number listed by the manufacturer for this engine. However, it is considered that, whilst the correct fuel injector would have been optimal for this engine, the one fitted would not have caused any problem in the operation of the engine with the exception of possible difficulties when running at idle, that is with the throttle closed.

No fuel was recovered from the aircraft due to the severity of the fire damage, but it was reported that motor gasoline had been used to refuel the aircraft. Aircraft, generally, are required to use aviation gasoline but the CAA does concede the use of motor gasoline in certain light aircraft which are listed, and where the gasoline has been obtained from aerodrome installations conforming to specified conditions. The Steen Skybolt is not listed as being the subject of an exemption to the Air Navigation Order allowing use of motor gasoline.

The engineering examination of the aircraft's controls showed no evidence of any control restriction. However, in a test on another Skybolt aircraft, it was found that with a person of average build strapped into the front seat, and holding a haversack of similar size to that found beside the aircraft wreckage on his lap, then the last one third of rearward movement of the control column was obstructed.