

CASA 1.131-E3B, G-BXBD

AAIB Bulletin No: 11/2000 **Ref: EW/G2000/06/01** **Category: 1.3**

Aircraft Type and Registration: CASA 1.131-E3B, G-BXBD

No & Type of Engines: 1 Hirth Tigre GIVA piston engine

Year of Manufacture: 1951

Date & Time (UTC): 1 June 2000 at 2014 hrs

Location: 2 miles east of Portishead

Type of Flight: Private (PFA Air Test)

Persons on Board: Crew - 1 - Passengers - 1

Injuries: Crew - None - Passengers - None

Nature of Damage: Engine shifted, damage to 3 wings, landing gear collapsed

Commander's Licence: Basic Commercial Pilot's Licence

Commander's Age: 63 years

Commander's Flying Experience: 6,400 hours (of which approximately 5 were on type)
Last 90 days - Not known
Last 28 days - Not known

Information Source: Aircraft Accident Report Form submitted by the pilot and subsequent telephone inquiries by AAIB

The aircraft was engaged on an air test for the purpose of renewal of its Permit-to-Fly following a major restoration. The pilot states that he and an engineer who had been involved in the restoration had been airborne for just over an hour when he applied some moderate negative 'g', at which point the engine appeared to cut out. He dived and advanced the throttle in an attempt to restart the engine but was unsuccessful. At a height of about 1,000 feet agl and with an airspeed of 120 kt, he decided that he would have to accept a forced-landing, selected a suitable field, transmitted a 'Mayday' and set-up a forced-landing pattern for the chosen field.

The selected field was slightly cross-wind and obstructed by power cables at its 'upwind' end, so the pilot intended to land well down the field, leaving height to clear the cables. Further attempts to restart the engine using the priming pump were unsuccessful and so he concentrated on the landing. However, it became apparent that the rate-of-descent was higher than he had anticipated and, with hindsight, he observed that the aircraft was significantly heavier on this occasion than when he had practised glide approaches previously. Even so, the aircraft managed to clear the wires previously

noted and the pilot believed they would land as intended. However, at a height of about 100 feet agl the engineer called, "Wires ahead" and the pilot saw a second set running at right angles to their track, disguised by trees and the boundary hedge of the field. They now had neither the height nor speed to fly over this second set so the pilot tried to fly under them, striking trees as he did so. The aircraft pitched onto the ground nose-first, coming to rest without catching fire. The two occupants evacuated normally with no reported injuries.

Description of the fuel system

The CASA 1.131-E is a licence-built version of the Bucker Jungmann aerobatic trainer. The fuel system comprises a single tank containing 82 litres in the forward fuselage. The tank has two outlets which can be selected by the pilots using a selector, labelled CLOSED, OPEN and RESERVE AND PRIME. When selected to RESERVE AND PRIME, fuel is fed from the lowest point of the tank and, as the name suggests, this is used for priming and starting the engine. Since it is lower than the other outlet described below, it also functions as a reserve supply in-flight.

In the OPEN position, fuel is fed from a 'flop' tube in the tank, which moves in response to negative 'g' forces and ensures that a supply of fuel is available in such conditions. This is believed to be the normal pre-take off and in-flight selection. An English translation of the original Spanish Flight Manual is available and, although the selection of RESERVE AND PRIME is stated in the pre-start checks, there did not appear to be any mention of moving the selector to OPEN subsequently. The pilot admits that he forgot to make this selection and that, upon applying a significant amount of negative 'g', it is therefore not surprising that the engine cut. Both he and the engineer in the front cockpit were aware of the necessity of selecting OPEN before commencing aerobatics, but both had forgotten.

Some consideration was given to recommending that the Flight manual be amended to include a requirement to select OPEN prior to take off, but these aircraft are normally flown on Popular Flying Association permits, for which a formal Flight Manual is not a legal requirement. Owners who possess such a document have probably acquired it by means of photocopying another, and thus their issue is uncontrolled. It also became apparent that an approved, modern fuel management system is obtainable and has been used by other owners, which overcomes this problem.