

Piper PA-34-200T, G-MAIR

AAIB Bulletin No: 5/97 Ref: EW/C96/12/3 Category: 1.3

Aircraft Type and Registration:	Piper PA-34-200T, G-MAIR
No & Type of Engines:	2 Continental TSIO-360-EB piston engines
Year of Manufacture:	1979
Date & Time (UTC):	12 December 1996 at 0710 hrs
Location:	Runway 09 Bristol Airport, Avon
Type of Flight:	Public Transport
Persons on Board:	Crew - 1 - Passengers - 2
Injuries:	Crew - None - Passengers - None
Nature of Damage:	Damage to left propeller, left engine, main and nose wheel tyres, right landing gear upper attachment
Commander's Licence:	Commercial Pilot's Licence
Commander's Age:	29 years
Commander's Flying Experience:	1,672 hours (of which 118 were on type) Last 90 days - 86 hours Last 28 days - 31 hours
Information Source:	AAIB Field Investigation

The commander, who had completed his final line check on 11 December 1996 after 51 hours of line training, was operating his first solo public transport flight. The flight, with two passengers on board, was to provide a 'flying eye' traffic reporting service to local radio stations in the south-west region. The aircraft was taxied normally, using the taxiway centre-line green lights to the holding point of Runway 09 and received clearance to line up. The two passengers, one seated beside the commander and the other in the rear, were occupied preparing to broadcast their traffic reports and did not specifically note the aircraft's progress. The weather conditions were: visibility 4,000 metres in haze, cloud overcast at 600 feet and a surface wind of 060°/07kt

The commander reported that he stopped the aircraft on the runway centreline, then set take off power and released the brakes. Almost immediately the rear seat passenger heard a 'thud' followed seconds later, as the aircraft accelerated, by several further thuds. The commander was not aware of these events but as the aircraft became airborne he felt 'a considerable impact' followed by

vibration from the left engine. He closed the throttles and landed straight ahead. He was aware that the aircraft settled left wing low as it came to a stop on the edge of the runway.

At first the commander thought that the aircraft had suffered a 'blow out' of the left landing gear tyre. He shut down the engines and, as the airport fire services arrived, made his exit from the aircraft along with his passengers. When he examined the aircraft he noted some blood on the leading edge of the inboard section of the left wing which had not been present during his pre-flight inspection. The left propeller and right landing gear door were also damaged. As a result of his inspection the commander believed that the aircraft had hit a bird or small animal during the take off run.

Subsequent examination of the airfield revealed that ten runway edge lights on the northern edge of the runway had been damaged during the aircraft's take off roll. Debris from the lights was spread over the surface and caused the runway to be out of service for approximately 30 minutes.

Airfield lighting

The taxiway leading to the threshold of Runway 09 is installed with centreline bi-directional green lights. As the lights cross the holding point for Runway 09 they alternate green and yellow curving towards and eventually running parallel with the white runway centreline lights. These curving 'lead-on' lights become uni-directional, acting as 'lead-off' lights only, between the runway edge and centreline. These 'lead-on'/'lead-off' lights are primarily for use in low visibility (less than 400 metres) and are not necessarily required to be illuminated for departures by PA 34 type aircraft in good visibility. Installed in a flush-mounted fitting, similar to a runway centreline light and close to the last visible 'lead-on' light is a white runway edge light (see Figure 1).

Follow-up action

The deficiency in a continuous line of 'lead-on' lights had been identified before the accident by the airfield Operations Manager and rectification work was planned to be carried out during the winter. Since the accident new bi-directional taxiway centreline light fittings have been installed so that the taxiway 'lead-on' lights now extend all the way and run parallel to the runway centreline.

Investigations carried out by the Operations Manager at the time of the accident, revealed that the runway centreline lights were not illuminated at the time of the aircraft's departure. A thorough check of the lighting system revealed no faults. The Manual of Air Traffic Services Part 2 and Aerodrome Manual for Bristol require a runway inspection prior to every night departure, if an interval of more than 15 minutes has elapsed between departing aircraft. As a result of the accident, and since no fault was discovered with the lighting system, whenever the runway centreline lights are changed to Runway 09 a visual inspection is carried out prior to aircraft movements.

Conclusions

The accident occurred when the commander of G-MAIR lined up for departure on the northern runway edge lights believing them to be the centreline lights. This was probably due to the following factors:

(a) The runway centreline lights had always been illuminated for all the previous take offs carried out by the commander during his training period prior to this, his first 'solo' public transport flight.

(b) The first runway light visible after the last lead-on light was a flush mounted runway edge light with a similar appearance to that of a runway centreline light.

(c) Only a few of the illuminated edge lights on the southern side of the Runway 09 would have been visible to the commander as he lined up due to the fact that the runway surface slopes up and away from the threshold and is also cambered.

(d) When seated in the left hand seat of a PA 34 the pilot's eyepoint is equivalent to that of a standing man of average height. Thus a more advantageous view of the runway afforded from the flight deck of a larger aircraft was not available.