

No: 11/86

Ref: 1c

Aircraft type and registration:	Cessna 207 G-AYTJ		
No & Type of engines:	1 Continental Motors Corp 10-520-F piston engine		
Year of Manufacture:	1970		
Date and time (UTC):	24 August 1986 at 1855 hrs		
Location:	Strathallan Airfield, Auchterarder, Scotland		
Type of flight:	Parachute dropping		
Persons on board:	Crew — 1	Passengers — 5 parachutists	
Injuries:	Crew — None	Passengers — 2 (minor)	
Nature of damage:	Damage to leading edge of left-hand tailplane and dorsal fin		
Commander's Licence:	Private Pilot's Licence		
Commander's Age:	42 years		
Commander's Total Flying Experience:	4695 hours (of which 3023 were on type)		
Information Source:	Aircraft Accident Report Form submitted by the pilot, written statements by the parachutists and telephone conversations with pilot and British Parachute Association		

The aircraft was engaged in the dropping of parachutists and on the flight in question was to be used for a simultaneous 5-man exit at 9000 feet; four parachutists in a diamond formation and a parachutist with a videotape camera. For this type of exit from this aircraft the parachutists leave the aircraft through the large cargo doorway on the right-hand side of the rear cabin, with two, (the centre and rear "floaters") already positioned in the slipstream. All involved had practised their exit on the ground before departure.

The initial climb was normal but, as clouds were closing in from the east, it was decided to make the drop at 5500 feet and Scottish ATC were informed. The pilot stabilized his run-in at a propeller speed of 2300 rpm and 15 inches Hg of manifold pressure, with 10° of flap deployed and slight nose-down trim applied in anticipation of the weight shift to the rear as the parachutists took up their positions. To avoid entering cloud the pilot eased back on power, descending a few hundred feet in a fairly level attitude. One of the parachutists later stated that it took a relatively long time for them to get in their exit positions, which he attributed to the nose-down pitch attitude of the aircraft fuselage.

The pilot reports that about this time the rearward weight shift became more than he could handle and that, even with the elevator control fully forward, the nose was pitching-up and the airspeed decaying. He applied power but is not sure whether or not the aircraft actually stalled; he recalls that the aircraft rolled to the right through about 120° and pitched rapidly nose-down as the parachutists let go.

The parachutist with the video-camera (rear floater) let go as he felt the aircraft lurch and the airspeed increase, and he passed under the right-hand tailplane. Three of the remaining parachutists could no longer hold onto the aircraft during the subsequent lurches and felt themselves being blown off; one passed over the right-hand tailplane and the other two went over the top of the aircraft, striking the dorsal fin and the leading edge of the left-hand tailplane. The other parachutist hit the roof and the floor of the cabin twice but remained inside. All of the parachutists in free-fall were able to stabilize and make normal parachute deployments.

The pilot looked back to inspect the rear of the aircraft and saw the deformation of the left-hand tailplane and the dent on the dorsal fin. The pilot then informed the ground base of the problem and offered the remaining parachutist a chance to jump, but he declined as he was feeling disorientated and had injured arms. The aircraft was responding poorly to elevator inputs and was vibrating but the pilot was able to put down 10° flap. Finding that the aircraft tended to pitch up and down as he reduced airspeed the pilot elected to make his landing approach at a higher airspeed than normal. However, the landing was completed without further incident and the aircraft was able to stop before the end of the runway.

Using weight and balance data provided by the parachute club and the pilot, the AIB made an estimate of the weight and centre-of-gravity position of the aircraft, just before the parachutists departed. The gross weight was approximately 3004 lbs, well within the limit of 3800 lbs, but the c.g. was at approximately fuselage station 60.5". This compares with the normal allowable c.g. range of fuselage station 34.8" (forward limit) to 50.5" (aft limit) at this weight.

The accident is also under investigation by the British Parachute Association.