

Piper PA-32RT-300T, G-BMEV

AAIB Bulletin No: 11/97 Ref: EW/G97/08/16 Category: 1.3

Aircraft Type and Registration:	Piper PA-32RT-300T, G-BMEV
No & Type of Engines:	1 Lycoming TIO-540-S1AD piston engine
Year of Manufacture:	1978
Date & Time (UTC):	17 August 1997 at 1504 hrs
Location:	Jersey Airport, Channel Islands
Type of Flight:	Private
Persons on Board:	Crew - 1 - Passengers - None
Injuries:	Crew - None - Passengers - N/A
Nature of Damage:	Damage to the propeller, spinner, engine cowling, nose landing gear doors and light
Commander's Licence:	Airline Transport Pilot's Licence
Commander's Age:	44 years
Commander's Flying Experience:	11,000 hours (of which 11 were on type) Last 90 days - 140 hours Last 28 days - 33 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

The flight was planned from Jersey Airport to Alderney. When about 5 nm out from Runway 26 at Alderney, the pilot selected landing gear down. The two main landing gear legs appeared to lock down as normal but the green light for the nose leg did not illuminate and the 'landing gear unsafe' warning light remained on. The pilot quickly checked the circuit breakers and tried the emergency 'free fall' system to extend the landing gear. However, the green light for the nose leg remained unlit and a flypast of the Alderney control tower confirmed that the nose leg had remained retracted.

The pilot flew a holding pattern to the south of Alderney, attempting to recycle the landing gear, using the normal and emergency systems but with no success, confirmed by a second flypast of the control tower at Alderney. The aircraft returned to Jersey and, after establishing radio contact with ATC, requested advice and assistance from the aircraft maintenance organisation, other owners of

the aircraft and a flying instructor. The procedures were reviewed and a number of attempts made to lower the nose leg, including the application of pitch inputs to the aircraft at around approach speed. Another flypast of the control tower at Jersey confirmed that the nose leg was still in the retracted position and the pilot made the decision to land on the two main wheels on the hard-surfaced Runway 27. ATC offered a landing on the grass runway at Guernsey but the pilot considered that this would pose a greater risk of damage to the aircraft.

After reviewing the 'power-off' procedures, which would minimise engine and propeller damage and reduce the risk of fire, the pilot made his approach at 85 kt, with full flap. Crossing the threshold he closed the throttle, pulled the mixture control to Idle Cut-Off (ICO) and turned off the ignition and battery/master switches. After touchdown on the main wheels the pilot held the nose off the ground as long as possible. As the aircraft slowed the nose dropped onto the runway surface, causing damage to the propeller, spinner, cowling and nose landing gear doors. After the aircraft stopped the pilot briefly ran through the checklist to ensure that all switches were off and then left the aircraft. The airport Fire Service attended but there was no fire.

Following the accident, the aircraft was examined by the maintenance organisation and it was found that the nose landing gear doors had been forced back during the landing. When the doors had been removed it was apparent that a small eye-end portion on the left-hand side of the doors' scissors linkage had fractured: this 'over-centre' linkage moves the nose landing gear doors with movement of the landing gear leg, against springs which hold the doors in their open (gear down) and closed (gear up) positions.

The geometry of the linkage indicated that the fracture had occurred when the nose leg was pushed upwards, as the nose contacted the runway. It was also found that the aircraft's hydraulic pump was delivering only 200 psi, rather than the normal 2,500 psi hydraulic pressure; further investigation revealed that this reduction was due to a split 'O' ring within the actuator back-up assembly, allowing hydraulic flow back into the pump and reducing the pressure to the landing gear actuators. It is likely, therefore, that the reduced hydraulic pressure was insufficient to extend the nose landing gear against the action of the springs, and other interference, within the door linkage. The fact that the nose leg would not extend when the pilot operated the 'emergency' free-fall system suggests that there was additional mechanical interference from previous damage to the scissors linkage.