

ACCIDENT

Aircraft Type and Registration:	Piper PA-22-150 Caribbean, G-ARHN	
No & Type of Engines:	1 Lycoming O-320-B2B piston engine	
Year of Manufacture:	1960 (Serial no: 22-7514)	
Date & Time (UTC):	15 September 2012 at 1400 hrs	
Location:	South of Popham Airfield, Hampshire	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - 1
Injuries:	Crew - 1 (Serious)	Passengers - 1 (Serious)
Nature of Damage:	Substantial	
Pilot's Licence:	1) National Private Pilot's Licence 2) Private Pilot's Licence	
Pilot's Age:	1) 44 years 2) 60 years	
Pilot's Flying Experience:	1) 88 hours (of which 8 were on type) Last 90 days - 0 hours Last 28 days - 0 hours 2) 940 hours (of which 341 were on type) Last 90 days - 1 hour Last 28 days - 1 hour	
Information Source:	Aircraft Accident Report Form submitted by the pilot and AAIB enquiries	

Synopsis

During a go-around, the aircraft made an undemanded turn to the left, the speed remained low and the aircraft did not gain height despite full power being selected. The aircraft stalled shortly before entering some treetops. The investigation found misinterpretations of Air Navigation Order's 90-day currency and pilot-in-command requirements.

History of the flight

The aircraft had two pilots on board. Pilot 1 occupied the left seat, but had not flown within the previous 90 days of the accident and had not flown the accident aircraft since August 2010. Pilot 2 occupied the right seat and was acting as a 'check' pilot who was supervising Pilot 1 in accordance with the policy of the group that operated the aircraft. Group policy stated that:

'If a member undergoing check has exceeded the 90 day, 3 take off and landing limit, then the check pilot has to be PI.'

The pilots refuelled the aircraft to full tanks prior to the flight. During the pre-flight inspection, the pilots noticed some sediment in the fuel sample from the left tank. However, after further samples were taken the fuel appeared to be free of any sediment. A clear fuel sample was also taken from the lower fuel strainer. The aircraft took off from Runway 26 at Popham Airfield, departed the circuit area and the pilots conducted approximately 35-45 minutes of upper air work in the local area before returning to the airfield to practise circuits. At Popham Airfield, touch-and-go landings are not permitted on Runway 26 so, after each full stop landing, pilots are required to taxi the aircraft to the takeoff point for any subsequent circuit. After rejoining the circuit, the pilots flew a number of circuits including a landing demonstrated by Pilot 2.

Shortly before the final approach, which was flown by Pilot 1, the pilots noticed that the fuel in the right tank had reduced to ¼ capacity so Pilot 1 selected the left tank. In the latter stages of the approach, Pilot 1 assessed that the aircraft was too high and decided to go-around so he applied full power. Almost immediately, the aircraft started to turn to the left. He checked that he had applied full power and that the carburettor heat control was in the off position. The aircraft turned through approximately 90° and struck the tops of trees to the south of the airfield. Pilot 2 reported that the engine was at full power but the airspeed was low and, just before the impact, the aircraft appeared to stall and the right wing dropped. A witness, who was standing on the airfield, described the left turn as being gentle at approximately 10° of left bank and the aircraft appeared to be slow and failed to gain height before it struck the treetops. He also stated that the engine appeared to be producing power and that the engine sound did not change until the impact. The aircraft fell to the base of the trees, both pilots were injured and the aircraft suffered substantial damage.

Aircraft fuel system

The aircraft was fitted with two 15 imperial gallon fuel tanks, one in each of the two wing roots. There is no fuel pump and the fuel is gravity fed to the engine. The fuel feed to the engine is via a fuel cock located on the left wall of the cockpit. The Flight Manual for the aircraft states that the aircraft must not take off with the right fuel tank selected if it is less than ⅓ full but does not specify any other fuel asymmetry limitations.

Status of Pilot 1

Pilot 1 believed that Pilot 2 was the pilot-in-command (PIC) of the aircraft for the flight in accordance with the group policy.

Status of Pilot 2

The investigation obtained evidence indicating that Pilot 2 performed the role of PIC until Pilot 1 had carried out three takeoffs and three landings to satisfy the 90-day currency requirement in accordance with the group policy. Some time after the flight, Pilot 2 stated that he had become aware that the group policy was “an incorrect interpretation of the ANO” and that, with the exception of the landing he demonstrated, he was neither handling pilot nor PIC during the flight.

CAP 393 Air Navigation Order (ANO)

Section 1, Part 33 of the ANO defines pilot-in-command as follows:

‘Pilot in command’ means a person who for the time being is in charge of the piloting of an aircraft without being under the direction of any other pilot in the aircraft’

Schedule 7 to the ANO, Part A Flight Crew Licences, Section 1 United Kingdom Licences, Sub Section 1

(Private Pilot's Licence (Aeroplanes)) para (2), sub-para (g)(i) states that:

'The holder may not fly as pilot in command of such an aeroplane carrying passengers unless within the preceding 90 days the holder has made at least three take-offs and three landings as the sole manipulator of the controls of an aeroplane of the same type or class;'

The CAA provided the following clarification of these rules:

'The aircraft was certificated for single pilot operation and therefore the only person who can be a member of the flight crew in addition to the handling pilot is a flying instructor who is instructing or supervising the handling pilot. A person who is not a flying instructor and not the handling pilot would be a passenger.'

'A pilot wishing to regain his/her 90-day currency to be entitled to carry passengers must complete at least three take-offs and three landings as the sole manipulator of the controls. These manoeuvres must be flown either solo or under the supervision of a flying instructor as a passenger cannot be carried until the currency is regained.'

'The rationale behind this rule is that a flying instructor has been trained to fly an aircraft from either seat and to know when to intervene if the pilot under instruction or supervision appears to be struggling to handle the aircraft safely. An instructor is also aware that he or she remains pilot in command during an instructional flight.'

Analysis

The engine appeared to be producing full power during the go-around but the aircraft appears to have been flying unusually slowly as it entered the undemanded turn to the left. At the time of the accident, the aircraft left fuel tank was nearly full and the right tank was at ¼ tank capacity. Although there are no fuel asymmetry limitations in the Flight Manual, the investigation could not discount the contribution of the fuel asymmetry to the uncommanded left turn at low speed during the go-around. The possibility that contaminated fuel from the left tank could have caused the engine to lose power during the go-around was considered. However, as the engine appears to have been producing power until the moment of impact, it is considered unlikely that the engine suffered any significant power loss. It is probable that the slow speed of the aircraft put it in a high drag configuration that prevented it from climbing.

Pilot 1 had not flown at least three take-offs and three landings in the 90 days before the accident flight. The group's policy stated that:

'If a member undergoing check has exceeded the 90-day, 3 take off and landing limit, then the check pilot has to be PI'

so he believed that Pilot 2 was PIC of the aircraft.

The ANO defines the pilot in command as a person who for the time being is in charge of the piloting of an aircraft without being under the direction of any other pilot in the aircraft. Pilot 1 was not within the 90-day requirement; he therefore should not fly as PIC of an aircraft carrying passengers. Pilot 2 was not a flying instructor and therefore should not be PIC whilst another pilot regains 90-day currency nor was he qualified to give direction to Pilot 1.

Conclusions

The most likely cause of the accident is that the handling pilot allowed the speed to reduce during the go-around. This, possibly combined with the asymmetric fuel loading, made control of the angle of bank difficult causing the aircraft to turn to the left prior to stalling as it entered the treetops.

In a single pilot aircraft, the handling pilot is the PIC unless he/she is being supervised or instructed by a flying instructor.

In order for a pilot to regain 90-day currency to be entitled to carry passengers, he/she must carry out at least three take-offs and three landings as the sole manipulator of the controls either flying solo or under the supervision of a flying instructor.