Aviation Safety Investigation Report 199401771

Piper Aircraft Corp
Arrow

08 July 1994

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Occurrence Number: 199401771 **Occurrence Type:** Accident
Location: 12km N Bowral
State: NSW **Inv Category:** 4
Date: Friday 08 July 1994
Time: 2020 hours **Time Zone** EST
Highest Injury Level: Fatal
Injuries:

	Fatal	Serious	Minor	None	Total
Crew	2	0	0	0	2
Ground	0	0	0	0	0
Passenger	1	0	0	0	1
Total	**3**	**0**	**0**	**0**	**3**

Aircraft Manufacturer: Piper Aircraft Corp
Aircraft Model: PA-28R-200
Aircraft Registration: VH-JEG **Serial Number:** 28R-7335388
Type of Operation: Instructional Dual
Damage to Aircraft: Destroyed
Departure Point: Bankstown NSW
Departure Time: 1945 EST
Destination: Canberra ACT

Crew Details:

Role	Class of Licence	Hours on Type	Hours Total
Pilot-In-Command	Commercial	284.7	1214
Student Pilot	Private	16.9	126

Approved for Release: Friday, November 22, 1996

FACTUAL INFORMATION

The aircraft was being flown on a night navigation training exercise from Canberra to Bankstown, then returning via Bathurst, in accordance with the night visual flight rules (NGT VFR). The crew included an instructor, a licensed private pilot undergoing NGT VFR training, and a licensed student pilot who was observing the flight from a rear seat. The exercise was to include a diversion during the return leg. The planned cruising altitude for the return leg was 7,500 ft, remaining outside controlled airspace. The flight plan submitted included the lowest safe altitude (LSALT) for each of the planned legs. The flight was conducted entirely at night.

The pilot-in-command held valid instructor and command instrument ratings. The pilot under instruction was undertaking NGT VFR training as a qualification towards obtaining a commercial licence. He had previously completed some basic instrument flight training.

The aircraft departed Canberra at 1745, arriving at Bankstown at 1853 after an apparently uneventful flight. It subsequently departed Bankstown at 1945 for the return flight. Recorded radar data indicated that, in accordance with its flight plan, the aircraft initially tracked towards Katoomba and climbed to 2,000 ft. After passing 22 NM from Sydney the aircraft commenced a further climb, reaching 4,300 ft by 33 NM, having infringed controlled airspace without a clearance. The aircraft then turned left onto a reciprocal track and descended to 2,300 ft. After travelling about 9 NM along the reciprocal track the aircraft turned right and tracked south towards Camden, descending to 2,100 ft. The pilot under instruction advised Flight Information Service that he was amending his flight plan, and was now tracking to Canberra via Camden and the Shellys non-directional beacon (NDB).

After passing Camden, the aircraft turned onto a south-westerly track, towards the Shellys NDB, and gradually climbed to an altitude of 3,100 ft. The climb rate was erratic and included periods where the aircraft descended at up to 300 ft/min. The altitude flown did not conform with the enroute LSALT of 3,900 ft. At 2017, a minute after reaching its maximum altitude the aircraft commenced a gradual descent at rates of up to 350 ft/min. Passing 2,500 ft, the aircraft turned left through 110 degrees onto an easterly track before colliding with terrain in the Hilltop area, at an elevation of about 1,820 ft, some 2 km south of the last recorded radar position. The calculated groundspeed just prior to impact was more than 150 knots.

An examination of the wreckage found no defects which were likely to have contributed to the accident. The aircraft had initially collided with the crown of a tree about 18 m above the ground, descending at an angle of about 15 degrees, in a wings level attitude. Both wingtips had been detached on impact with the tree, and their relative positions suggested the aircraft had been inverted at that point. An emergency locator transmitter (ELT) fitted to the aircraft had activated on impact. Another activated ELT was also found in the wreckage. This unit was the personal property of one of the occupants. The ELT signals assisted the crew of a search helicopter to subsequently locate the accident site.

Post-mortem examinations indicated that neither the instructor or rear seat observer had any pre-existing physical condition likely to have contributed to the accident. The student was found to have severe coronary artery disease, but there was insufficient evidence to indicate that he had suffered some form of inflight incapacitation. Toxicological analysis indicated the three crew members, despite being non-smokers, had carbon monoxide saturation levels ranging between 7% and 8%. The reason(s) for the elevated carbon monoxide levels was not established, however, values of up to 10% at sea level are considered to be within the normal range.

A specialist analysis of the weather conditions in the vicinity of the crash site indicated there was fog in the area, with five to eight octas of stratus or cumulus cloud ranging from 2,000 ft to 8,000 ft. The wind was light and variable. The temperature was eight degrees Celsius.

ANALYSIS

After departing Bankstown the aircraft had conducted a step climb, apparently attempting to remain outside controlled airspace whilst achieving LSALT requirements. However, just prior to commencing the diversion, the aircraft had briefly penetrated controlled airspace. It then tracked towards Camden, descending to 2,300 ft. After passing Camden the aircraft remained below the enroute LSALT, failing to climb to 3,900 ft, although the aircraft did climb somewhat erratically to 3,100 ft, remaining there for only a short time before gradually descending into the ground. The vertical profile flown prior to the accident would appear to indicate that the instructor was not adequately monitoring the performance of the student and consequent flight progress. It could not be determined if the student's heart disease contributed to the accident, however, if he had become disabled then it would be expected that the instructor could have regained control of the aircraft with the assistance of the passenger.

The reason why the aircraft had climbed somewhat erratically after passing Camden, and then descended, may have been due to an attempt to remain clear of cloud. The radical alteration of track, and increase in groundspeed just before impact, may have been indicative of the student becoming spatially disoriented whilst attempting to either remain clear of instrument meteorological conditions (IMC), or having unintentionally entered IMC. Why the instructor, who was qualified to fly in IMC, did not, or could not intervene, was not able to be established. The carbon monoxide levels, although slightly elevated, are not considered to have been sufficient to have caused any significant impairment of the performance of the flight crew.

SIGNIFICANT FACTORS

The investigation was unable to determine with any certainty the significant factors associated with this occurrence.