No: 8/91 **Ref: EW/C91/5/4** **Category: 1c**

Aircraft Type and Registration:	Piper PA-28-161, G-SACV	
No & Type of Engines:	1 Lycoming O-320-D3G piston engine	
Year of Manufacture:	1989	
Date & Time (UTC):	20 May 1991 between 1040 hrs and 1330 hrs	
Location:	Grizedale Head, High Cross Moor, near Lancaster	
Type of Flight:	Private	
Persons on Board:	Crew - 2	Passengers - None
Injuries:	Crew - 2 (fatal)	Passengers - N/A
Nature of Damage:	Aircraft destroyed	
Commander's Licence:	Private Pilot's Licence	
Commander's Age:	64 years	
Commander's Flying Experience:	253 hours (of which 12 were on type)	
Information Source:	AAIB Field Investigation	

The VFR flight from Sherburn-in-Elmet, Yorkshire to Blackpool and back was flown with two pilots on board, one to fly the aircraft outbound and the other on the return. On the return journey the aircraft struck high ground several miles north of its declared route.

The aircraft departed from Sherburn-in-Elmet at 0825 hrs, with 30 gall imp of fuel on board and routed via Pole Hill VOR and Fleetwood Visual Reporting Point to Blackpool. The pilot had some difficulty in identifying both the airfield and the runway in use at Blackpool but landed safely, albeit on the wrong runway, at 0954 hrs. The pilots spent half an hour on the ground paying landing fees and collecting weather reports.

The weather at Blackpool was 260°/12 kt, 10 km, 2 oktas at 1000 feet, 7 oktas at 1500 feet, and the area forecast for the return flight indicated scattered/broken stratus between 1000 feet and 1500 feet, with a wind of 270° to 280°/ 20 kt. The accuracy of this is confirmed by an aftercast for the region. The aftercast also states that hill tops were probably in cloud and this was confirmed by witnesses to the accident.

During the time spent on the ground, neither pilot commented upon any unserviceability of the aircraft and they took off for the return journey at 1025 hrs. When, at 1028 hrs, they reported to Blackpool ATC that they were abeam Blackpool Tower and were routing via Fleetwood, they were told to report passing Fleetwood and to change frequency to Warton Lower Airspace Radar Service (LARS) on 124.45 MHz. Nevertheless, at 1032 hrs, still on the Blackpool frequency, they reported "OVERHEAD FLEETWOOD, TURNING ONTO A COURSE FOR POLE HILL" and were again told to change to the Warton frequency. At 1035 hrs, they called Warton stating that they were "...OVERHEAD FLEETWOOD, ON COURSE FOR POLE HILL AND SHERBURN....AT 800 FEET". This was the last communication that any ATC unit had with the aircraft, although Warton unsuccessfully attempted to contact them at 1057 hrs.

A recording of primary returns from St Anne's radar, definitely identified as those of the accident aircraft, shows that at 1035 hrs they were approaching Cockerham on a track of 073° (M) rather than the 116° (M) direct track to Pole Hill. The aircraft was seen to continue on that course until a point two or three miles past Cockerham, when radar contact was lost at 1036 hrs. Although the average track shown on the radar appears to follow the coastline between Fleetwood and Cockerham, there is no direct evidence to suggest why this particular course should have been flown, rather than the one which the pilots had just stated and had drawn on their map.

The wreckage of the aircraft was found on moorland at about 850 feet on the west side of a large area of high ground, 7 nm east northeast of Cockerham, at a point lying very close to the extended centreline of the aircraft's track over Cockerham. Examination of the site revealed that the aircraft had struck the ground while steeply banked to the left, in a shallow descent and at a speed considerably in excess of the cruising speed of this type of aircraft. These impact parameters were consistent with the aircraft striking the ground whilst in a spiral dive.

At about 1040 hrs, witnesses in the vicinity of the accident site, which was obscured by low cloud, report that the aircraft sounded as if it was circling at a low altitude and, although reports of the engine sounds are varied, the balance of evidence suggests that it was functioning normally. None of the witnesses heard sounds consistent with an accident, but the coincidence of the geographical position of the witnesses with that of the wreckage allows that it may have occurred at that time.

However, between about 1045 hrs and 1100 hrs, an aircraft exactly fitting the description of the accident aircraft was reported by three witnesses to be tracking and backtracking at very low altitude in the area of Settle, 15 nm east of the previously mentioned witnesses. This position approximately coincides with an extension of the aircraft's last known track and, furthermore, the time of these sightings coincides with the elapse of a feasible flight time from the previous sightings.

Although there is insufficient evidence to state the exact time of the accident, it is apparent that it occurred between 1040 hrs, when it was heard over the accident site and 1330 hrs, when the wreckage was first discovered and reported. Post-mortem examination of the two occupants revealed no condition which could be considered as contributory to the accident.

The impact inflicted severe damage to the two navigation-communication radios and destroyed their 'glass' frequency displays . Nevertheless, the electronic chips forming the memory elements in each set remained intact and it was possible to energise both chips and to determine the frequencies selected on each box at the time their power supplies ceased. It was found that the No.1 box had the Warton and Blackpool frequencies selected respectively to the USE and STAND-BY communications positions whilst the Pole-Hill and Gamston VOR frequencies were selected respectively to the USE and STAND-BY navigation positions .

The extent of the impact damage rendered it impossible to establish any useful data from the instruments but examination of the vacuum pump confirmed that it had been functioning correctly at the time of the impact. No evidence was found during detailed examination of the aircraft to suggest that any mechanical failure had occurred prior to impact.