Aviation Safety Investigation Report 199400612

Swearingen Aviation Corp Merlin III

09 March 1994

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Aviation Safety Investigation Report

199400612

Occurrence Number: 199400612 **Occurrence Type:** Accident
Location: 15km NE Tamworth, Aerodrome
State: NSW **Inv Category:** 3
Date: Wednesday 09 March 1994
Time: 1734 hours **Time Zone** EST
Highest Injury Level: Fatal
Injuries:

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

Aircraft Manufacturer: Swearingen Aviation Corp
Aircraft Model: SA226-AT
Aircraft Registration: VH-SWP **Serial Number:** AT-033
Type of Operation: Charter Cargo
Damage to Aircraft: Destroyed
Departure Point: Armidale NSW
Departure Time: 1623 EST
Destination: Tamworth NSW

Crew Details:

Role	Class of Licence	Hours on Type	Hours Total
Pilot-In-Command	ATPL 1st Class	335.0	2782

Approved for Release: Thursday, October 12, 1995

SYNOPSIS

The aircraft was engaged on a freight courier service and had departed Bankstown at 0630 EST on 9 March 1994 and proceeded to Tamworth, Armidale, Glen Innes and Inverell. The pilot rested at Inverell for approximately seven hours before departing at about 1640 on the return flight to Bankstown via Glen Innes, Armidale and Tamworth. The flight was planned to be conducted in accordance with the Instrument Flight Rules (IFR) and departed Armidale for Tamworth at 1723. At about 1734 the aircraft impacted a mountain 8.2 NM north-east of Tamworth at 2,685 ft above mean sea level (AMSL), after being cleared to make a visual approach by Tamworth Tower. A short time after the accident, the pilot of a search aircraft observed that the top of the mountain was obscured by cloud.

1. FACTUAL INFORMATION

1.1 History of the flight

VH-SWP was operating on a standard company flight plan for the route Bankstown-Tamworth-Armidale-Glen Innes-Inverell and return, and the flight plan indicated the flight would be conducted in accordance with IFR procedures. The classification of the flight was shown as non-scheduled commercial air transport although the aircraft was operating to a company schedule, and departure and flight times for each route segment were indicated on the flight plan.

The aircraft departed Bankstown at about 0640 and proceeded as planned to Inverell where the pilot rested until his departure that afternoon for the return journey. The schedule required an Armidale departure at 1721. At 1723 the pilot reported to Sydney Flight Service that he was departing Armidale for Tamworth. The planned time for the flight was 17 minutes.

Although the flight-planned altitude for this sector was 6,000 ft, the pilot was unable to climb immediately because a slower aircraft, which had departed Armidale for Tamworth two minutes earlier, was climbing to that altitude. In addition, there was opposite direction traffic at 7,000 ft. The next most suitable altitude was 8,000 ft, but separation from the other two aircraft, which were also IFR, had to be established by the pilot before further climb was possible. The published IFR lowest safe altitude for the route was 5,400 ft.

The pilot subsequently elected to remain at 4,500 ft in visual meteorological conditions (VMC) and at 1727 requested an airways clearance from Tamworth Tower. A clearance was issued by ATC to the pilot to track direct to Tamworth at 4,500 ft visually. At about 1732 the pilot requested a descent clearance. He was cleared to make a visual approach with a clearance limit of 5 NM by distance measuring equipment (DME) from Tamworth, and was requested to report at 8 DME from Tamworth. The pilot acknowledged the instructions and reported leaving 4,500 ft on descent. Transmissions from ATC to the pilot less than two minutes later were not answered. The aircraft was not being monitored on radar by ATC, nor was this a requirement.

At about 1740, reports were received by the police and ATC of an explosion and possible aircraft accident near the mountain range 8 NM north-east of Tamworth Airport. The aircraft wreckage was discovered at about 2115 by searchers on the mountain range.

Soon after the aircraft was reported missing, a search aircraft pilot, who had extensive local flying experience, reported to ATC that the top of the range (where the accident occurred) was obscured by cloud, and that there was very low cloud in the valley nearby.

1.2 Damage and impact information

The aircraft was on the Armidale to Tamworth track 8.2 NM from Tamworth when it impacted trees at approximately 2,685 ft AMSL. It was descending at an angle of approximately 3.5 degrees, and was banked about 17.5 degrees to the left at impact. The aircraft maintained a straight path after initial impact but had rolled to a bank angle of 25 degrees left by the time the left wing struck a second tree 35 m further on. It then impacted the ground left wing low and inverted, before bouncing into a rock face 200 m from initial impact. The main fuselage wreckage caught fire and the cabin area was destroyed.

1.3 The pilot

The pilot was 24 years old and was correctly qualified and endorsed to perform the flight. He had flown on the two days prior to the accident following three days off duty. He had not flown this route before. He completed a flight check on 28 October 1994 and his performance was assessed as satisfactory. The flight check report stated that the requirement to be aware of terrain at all times was reviewed with the pilot.

The pilot was not known to be suffering from any ailment and appeared to be in good spirits on the day of the accident.

1.4 The aircraft

1.4.1 Aircraft history

The Swearingen SA226-AT aircraft was manufactured in 1975. The Australian certificate of airworthiness was issued on 15 May 1986. The last periodic inspection was completed on 11 January 1994.

1.4.2 Weight and balance

The aircraft weight and balance (centre of gravity) were within limits for the flight.

1.4.3 Aircraft serviceability

There were no known unserviceabilities other than the windscreen wipers. When the aircraft arrived at Tamworth in the morning it was raining, and the aircraft was cleared to land on runway 30 right. During the approach the pilot made a comment to the aerodrome controller (ADC) to the effect that it was difficult to see out of the aircraft without the windscreen wipers working. Why the windscreen wipers were not working, or when they became unserviceable, could not be determined. Effective use of the windscreen wipers would not have been possible at the speed at which the aircraft was flying immediately prior to the accident.

1.5 Wreckage examination

1.5.1 Structure

All aircraft extremities and control surfaces were accounted for at the accident site. The damage sustained was consistent with the application of excessive loads during the accident sequence and subsequent fire. There was no evidence found of in-flight fire. As far as could be determined there was no pre-impact abnormality with the structure and all damage was a result of impact forces.

1.5.2 Flight controls

All control systems were examined although only portions of control surfaces were recovered. Where found, the hinges, push-pull rods and cables were correctly assembled and secured. Witness marks indicated that at the time of wing impact with the trees, the aileron was in a neutral position, aileron trim was neutral, and flaps were in the up position.

1.5.3 Landing gear

All major components of the landing gear system had been torn from the aircraft and it was not possible to determine if the individual legs were up or down. However, the hydraulic actuators which remained attached to the right wing were in a position consistent with the right gear being in the retracted position

1.5.4 Other systems

Due to the extent of destruction of the aircraft, the functional status of its systems, including the fuel, electrical, and pitot-static systems, could not be determined.

1.5.5 Crashworthiness

The amount and nature of aircraft destruction indicated that the aircraft approached the accident site at high speed. The cockpit area was destroyed. Examination of the pilot's seat and harness indicated that although the shoulder harness had not been fastened at the time of impact, the impact dynamics were such that the accident was non-survivable.

1.6 Meteorological information

A low pressure system was situated near Albury NSW with a central pressure of 1,010 hectopascals (hPa). A weak trough extended from the low into Queensland. A high pressure system with a central pressure of 1,028 hPa was centred in the Tasman Sea. The resulting airstream was a very moist northerly to north-easterly flow with extensive low cloud over the north-eastern regions of New South Wales.

The information being broadcast on the Tamworth Automatic Terminal Information Service (ATIS) at the time of the accident indicated that the weather at Tamworth airport included a light and variable wind, two octas of cloud at 1,000 ft, with visibility reducing to 3,000 m in rain.

The pilot of a search aircraft which was in the area about 20 minutes after contact was lost with VH-SWP said that the general cloud base was about 2,200 ft with lower patches. He said he had climbed above the cloud and found the tops at 2,800 ft, with some higher patches to about 3,100 ft. The higher patches were obscuring the terrain. There was a higher layer of cloud with a base at about 3,800 ft. He could not see towards Armidale as it seemed as though the two layers converged. From the accident area he could see Tamworth easily and visibility in that direction was good. When the same pilot later ascertained where the accident occurred, he confirmed that the area of the accident site had been covered by wispy cloud when he flew over it shortly after the accident.

1.7 Additional information

1.7.1 Recorded radar data

The aircraft was under radar coverage from Armidale to a point approximately 2.5 NM from the accident location. The recorded radar data showed that the aircraft departed Armidale (runway 05) and turned left to intercept the Armidale-Tamworth track. The aircraft climbed initially to 5,000 ft but then descended to 4,500 ft and maintained this altitude until about 1731 when it climbed to 4,900 ft. (Its position at that time coincided with Mt Gulligal which is 4,070 ft AMSL.) The radar data showed the aircraft leaving 4,500 ft at 1732:40, which was the time the pilot received descent clearance. The last recorded altitude was 3,900 ft when radar contact was lost at about 10 NM from Tamworth. The computed aircraft ground speed at that position was 260 kts.

1.7.2 Air-ground communications

Automatic voice recordings of air-ground and air-air communications indicated that satisfactory two-way communications existed in the period leading up to the accident.

2. ANALYSIS

Other traffic on the Armidale-Tamworth route delayed the pilot of VH-SWP from climbing to his planned altitude of 6,000 ft. As a result, he apparently elected to remain at 4,500 ft and conduct the flight in VMC. When the pilot called Tamworth Tower he reported being visual at 4,500 ft, and was given a clearance to track direct to Tamworth in visual conditions at 4,500 ft before being cleared for a visual approach. The accident site was observed to be covered by cloud shortly after the accident. It is possible, therefore, that the pilot inadvertently entered cloud and failed to remain in visual contact with the ground.

3. CONCLUSIONS

3.1 Findings

1. The pilot was correctly endorsed and qualified to undertake the flight, and the flight was operating in accordance with the scheduled departure time from Armidale.

2. The flight was planned to be conducted under the instrument flight rules but because of other traffic it was not expedient to climb to an appropriate altitude.

3. The flight was conducted at 4,500 ft, apparently under the visual flight rules.

4. The pilot reported that he could remain visual and was cleared by ATC to make a visual approach.

5. The aircraft was not being monitored on radar by ATC, nor was this a requirement.

6. The last recorded radar data showed the aircraft descending through 3,900 ft, 2.5 NM from the accident site.

7. There was low cloud and rain in the area at the time of the accident.

8. The pilot allowed the aircraft to descend into terrain for reasons which could not be determined.

9. No evidence was found of any physiological impairment of the pilot or of aircraft defects which may have contributed to the accident.

3.2 Significant factors

1. The pilot was making a visual approach in weather conditions unsuitable for such an approach.

2. The pilot had not flown this route before.

3. The aircraft was flown below the lowest safe altitude in conditions of poor visibility.