Aviation Safety Investigation Report 199701567

Swearingen Aviation Corp Metro 2

16 May 1997

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Aviation Safety Investigation Report

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Occurrence Number: 199701567 **Occurrence Type:** Accident
Location: Emerald, Aerodrome
State: QLD **Inv Category:** 4
Date: Friday 16 May 1997
Time: **Time Zone** EST
Highest Injury Level: None

Aircraft Manufacturer: Swearingen Aviation Corp
Aircraft Model: SA226-TC
Aircraft Registration: VH-WGV **Serial Number:** TC-287
Type of Operation: Charter Cargo
Damage to Aircraft: Substantial
Departure Point: Emerald QLD
Departure Time:
Destination: Thangool QLD

Approved for Release: Monday, September 1, 1997

Weather at the time of departure from Emerald was reported to be 6 to 7 OKTAS of low cloud with patches of rain in the area. Light rain was falling at the time the aircraft taxied. The wind was light with a slight crosswind from the right. Visibility was in excess of 10 KM. The runway was damp and there were several patches of water on the runway.

The pilot reported that the take-off proceeded normally until approximately 50 knots when he disengaged the nose-wheel steering. At this point, the aircraft started to diverge to the right of the centreline. In an attempt to return the aircraft to the centreline the pilot used rudder but this was ineffective. The pilot then rejected the take-off by moving the power levers to idle but the aircraft continued to diverge to the right and departed the sealed surface of the runway.

The pilot used reverse thrust in an attempt to slow the aircraft but this appeared ineffective and the aircraft continued to turn to the right and slide on the wet grass surface. The aircraft by this time was heading for a small levee bank beside a drainage ditch. The pilot assessed that the aircraft would probably climb over the levee bank, so he elected to introduce power on the left engine in an attempt to turn the aircraft before the levee bank. However, this was only partially successful and the aircraft came to rest adjacent to the levee bank facing approximately 180 degrees from the take-off heading. The left propeller contacted the bank as the aircraft stopped.

The aircraft had travelled 121 M after leaving the runway. The distance at which the aircraft left the centreline of the runway could not be accurately determined due to the runway surface. The nose-wheel track was approximately 1 metre to the left of the right hand wheel track and continued at this distance until approximately 5 metres from the end of the tracks, at which point it crossed over the top of the right wheel track.

The aircraft suffered damage to the left propeller and engine. Examination of the engine when removed from the aircraft confirmed that it had suffered considerable internal damage consistent with a propeller strike at high power.

The operator reported that there had been several minor problems with the nose-wheel steering system in the 5 weeks prior to the accident. These problems, however, caused the system to fail in the off mode.

The nose-wheel steering system was examined and a series of tests conducted. It was found that with the nose-wheel steering armed, any movement of the speed levers caused an uncommanded movement of the nose-wheel to maximum right deflection. The fault was traced to the steering amplifier and this was subsequently removed for further testing. Once the amplifier was removed from the aircraft and replaced with a serviceable unit, the fault did not re-occur. Extensive testing of the amplifier has been unable to reproduce the fault.

The patches of water on the runway were not considered to be a factor in this accident.