Aviation Safety Investigation Report 199504139

Cessna Aircraft Company Skylane

06 December 1995

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Aviation Safety Investigation Report

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Occurrence Number: 199504139 **Occurrence Type:** Accident
Location: 16km W Bundaberg, Aerodrome
State: QLD **Inv Category:** 3
Date: Wednesday 06 December 1995
Time: 0745 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	3	0	0	0	3
Total	**4**	**0**	**0**	**0**	**4**

Aircraft Manufacturer: Cessna Aircraft Company
Aircraft Model: 182Q
Aircraft Registration: VH-DFR **Serial Number:** 18266553
Type of Operation: Non-commercial Pleasure/Travel
Damage to Aircraft: Destroyed
Departure Point: Maroochydore QLD
Departure Time: 0640 EST
Destination: Agnes Waters QLD

Crew Details:

Role	Class of Licence	Hours on Type	Hours Total
Pilot-In-Command	Private	32.0	342

Approved for Release: Thursday, October 24, 1996

FACTUAL INFORMATION

Sequence of Events

The flight was planned to transport three passengers to Agnes Waters, returning on the same day.

The pilot commenced planning about two weeks before the flight. On the morning of the flight, he submitted a visual flight rules (VFR) flight plan which was received in Brisbane at 0543 EST. The flight plan indicated a planned departure time from Maroochydore of 0630, to cruise at 6,500 ft tracking about 5 NM west of Bundaberg and with a search and rescue time (SARTIME) for Agnes Waters of 1100.

At 0708 the pilot reported to Brisbane Flight Service that he was descending to 3,500 ft due to cloud. This was the last known radio transmission from the pilot.

Witnesses heard the aircraft circling for 5-10 minutes in the Kolan South area (10 NM west of Bundaberg airport) at about 0740. The engine sounded normal, the sound fading and increasing as the aircraft circled. One witness reported hearing a burst of engine power immediately followed by the sound of ground impact. None of the witnesses saw the aircraft before the accident.

The wreckage was found in an open, fallow cane field. The accident was not survivable and all four occupants were killed by impact forces.

Pilot in Command

The pilot held a valid class 2 medical certificate for a private pilot licence. There was no known medical condition which could have contributed to the accident.

The pilot was adequately rested prior to the accident.

Of his 342 flying hours, the pilot had completed 32 hours on this type of aircraft. He had flown 4 hours (2 hours on type) in the previous 90 days.

Three days before the accident, the pilot had taken part in a club competition with an instructor pilot seated in the right seat. The competition included a climb under simulated instrument meteorological conditions (IMC) from 500 ft to 2,000 ft and some 45-degree angle of bank turns. This exercise was completed to the satisfaction of the instructor pilot. The pilot had logged 7 hours instrument flight time although he did not hold an instrument rating.

The pilot's last biennial flight review was conducted five months before the accident.

Meteorology

Over the period of the flight, the general weather in the area consisted of a very moist, unstable light northerly flow ahead of a trough to the west of the Great Dividing Range. Winds below 5,000 ft were north-westerly at less than 15 kts. In the Maroochydore area at 0600 there was scattered cumuliform cloud with a base around 3,000 ft and broken middle level cloud. ('Scattered' indicates 1-4 octas of cloud cover and 'broken' 5-7 octas.) Further north, the main base lowered and became broken to overcast by Maryborough.

The area forecast (ARFOR) for Area 40 covering the period 0130 to 1800 issued by the Bureau of Meteorology indicated thunderstorms and showers clearing from the coast by 0400 and redeveloping after 1200. The amended Area 40 forecast for the period 0600 to 2100 indicated scattered showers on the coast north of Bundaberg until 0900, isolated showers until 1200 and scattered showers and thunderstorms after 1200.

Terminal area forecasts (TAFs) and amended TAFs issued for Maryborough and Bundaberg were similar. The forecast issued at 0426 indicated a light northerly wind, scattered cumulus cloud and temporary periods after 1300 (up to 60 minutes) of thunderstorm activity. These forecasts were amended at 0725 to reflect intermittent periods (up to 30 minutes) of reduced visibility, showers, rain and low cloud for the period from 0700 to 1300; and again at 0803 to predict intermittent periods of thunderstorms and rain between 0800 and 1300.

A pilot who arrived at Bundaberg at about 0710 from Archerfield stated that conditions were visual until about 20 NM south of Bundaberg when he encountered heavy rain. Maryborough had some cloud, but the circuit area was visual. He made a distance measuring equipment (DME) arrival to Bundaberg down to 840 ft before landing. He stated that there were lower patches of cloud with rain, and he estimated the cloud base on departure 25 minutes later to be about 900 ft.

A second pilot departed Bundaberg soon after 0700. He said the cloud base was about 400 ft, broken and in layers. There was no rain and visibility was about 10 NM.

A third pilot who also departed soon after 0700 reported scattered cloud at about 300 ft in layers and that the coastal route to the south-east appeared to be good. To the north-west through north to the north-east, visibility was restricted in falling rain. He said the cloud extended to Flight Level (FL) 170.

A pilot who arrived at 0905 said that the cloud was unbroken from FL160 to 600 ft from 30 NM south of Bundaberg. There were build-ups with heavy rain to the north and south of Bundaberg.

Witnesses on the ground in the South Kolan area reported hearing a thunderstorm at the time of the accident. They reported low cloud and light rain.

Communications

A transmission from the pilot at 0708 was the last recorded transmission from the aircraft. The Bundaberg aviation data tape did not record any transmissions from the accident aircraft.

An analysis of the appropriate radar tapes did not indicate any trace of the aircraft.

Wreckage and Impact

The aircraft had impacted the ground in a steep nose-down attitude, right wing low, while rotating to the right. The aircraft disintegrated on impact, with the majority of the wreckage coming to rest about 23 m forward of the initial impact site.

The right wingtip had struck the ground first about 4 m before the main impact, followed by the right mainwheel. After the main impact the aircraft broke up, with sections of wreckage found up to 60 m from the main impact point. Fuel was spread over a wide area to the right of the wreckage centreline; consequently, the wreckage did not burn.

Both wings displayed typical evidence of in-flight overstress in a positive 'g' direction, indicating a possible attempt to recover the aircraft to level flight before impact. All control surfaces were present and control cables and push rods were still attached although severely disrupted.

The engine was subjected to an on-site examination and later to a partial teardown. No pre-accident fault could be found with the engine. The lack of pre-impact damage is supported by witness evidence of hearing the sound of an aircraft's engine.

Other components were examined in an attempt to determine aircraft configuration, attitude and serviceability. The attitude indicator gyro and the vacuum pump both showed signs of operation before impact, but the degree of damage made obtaining any useful information from any of the other recovered components impossible. A further difficulty was encountered in finding small components due to their wide distribution and a combination of soft soil and torrential rain.

The aircraft was fitted with a Trimble global positioning system (GPS) mounted on the instrument panel with tape, but not connected to the aircraft. The pilot had prepared the GPS the day before the accident and had asked for help from another pilot to program it. One pilot claimed that it was not an easy GPS to use and that he had difficulty turning it on. No information was recovered from the GPS.

Emergency Locator Transmitter

The aircraft was equipped with a fixed Dorne and Margolin 6.1 emergency locator transmitter (ELT) which complied with TSO C91. The ELT was severely damaged in the accident and failed to operate.

Weight and Balance

The aircraft's weight was estimated at 1,270 kg at takeoff, which is within weight limits. Load distribution could not be determined.

Aircraft Documentation

The current maintenance release was not found at the accident site. However, previous maintenance releases and aircraft logbooks indicated that all relevant engine and airframe airworthiness directives were incorporated and that the aircraft should have been serviceable for the flight.

ANALYSIS

The pilot probably held ARFORs and TAFs issued at 0130 and 0426 which indicated little concern for the period of the flight to Agnes Waters and return. The ARFOR indicated only scattered showers for the period and the TAF predicted scattered cumulus cloud. Consequently, the pilot probably had few concerns about proceeding VFR on his planned track.

A TAF issued for Bundaberg at 0725 indicated intermittent periods from 0700 to 1300 of reduced visibility, showers, rain, and cloud at 900 ft. The pilot was probably not aware of this forecast.

The aircraft seemed to be serviceable at the time of impact. The engine was operating and the airframe was intact. No evidence was found to suggest any flight control circuit failures. Damage to the attitude indicator gyro and the vacuum pump indicated that both of these components were operating at impact. Consequently, the aircraft flight instruments were probably operating normally.

The pilot was considered to be cautious and conscientious in his approach to flight preparation and in-flight procedures. He commenced planning the trip two weeks before departure by discussing the route with instructor pilots and preparing a chart. He had sought help in preparing the GPS, and participated in a club competition three days before the accident. On the day of the flight, the pilot had submitted a flight plan.

About 30 minutes before the accident the pilot had descended to avoid cloud. This indicates that his intention was to continue with the planned flight and to remain visual. However, at some point near Bundaberg the aircraft entered cloud. This may have been inadvertent, or the pilot, relying on the forecast which he held, may have decided to fly through what he thought was a small area of cloud.

Witnesses reported the aircraft circling for up to 10 minutes and during this manoeuvring, the pilot probably entered a thunderstorm. A combination of low instrument hours, no instrument rating and turbulence in the cloud could lead to pilot disorientation and loss of control.

CONCLUSIONS

Findings

1. The pilot in command held a valid pilot licence.

2. The pilot in command did not hold an instrument rating.

3. There was no evidence found to indicate that the performance of the pilot in command was adversely affected by any physical or medical condition.

4. There was no evidence found to indicate that the aircraft was other than airworthy for the flight.

5. The weather forecasts obtained by the pilot indicated that the weather was suitable for the flight as planned.

6. The pilot submitted a VFR flight plan for the Maroochydore to Agnes Waters route.

7. While en route, the weather deteriorated, necessitating a descent by the aircraft.

8. Amended forecasts issued while the aircraft was in flight were probably not received by the pilot.

9. The aircraft entered cloud.

10. The accident was not survivable.

Significant Factors

1. Weather conditions encountered south of Bundaberg were considerably worse than the forecast held by the pilot.

2. The pilot allowed the aircraft to enter cloud.

3. The pilot in command lost control of the aircraft and was not able to recover control before ground impact.