

AVIATION OCCURRENCE REPORT

LOSS OF CONTROL - SPIRAL

CESSNA 150 C-FQZC

BELLIS, ALBERTA

16 SEPTEMBER 1996

REPORT NUMBER A96W0178

The Transportation Safety Board of Canada (TSB) investigated this occurrence for the purpose of advancing transportation safety. It is not the function of the Board to assign fault or determine civil or criminal liability.

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Summary

The pilot of the Cessna 150 was on a night visual flight rules (VFR) flight from Spirit River, Alberta, to St. Paul. Prior to his departure, the pilot phoned the Grande Prairie Flight Service Station (FSS) to receive a weather briefing and file a flight plan. When the pilot filed his flight plan (at about 2030), he was told that his flight plan would be opened in 10 minutes unless the FSS specialist heard anything different. The aircraft departed at 2040 mountain daylight saving time (MDT) for the planned four-hour flight. No radio transmissions from the aircraft were heard by Grande Prairie or any other FSS along the route.

At 2310, witnesses in their house heard the whine of an aircraft engine followed by a loud thump. They went outside to search the area around their farm, but it was raining too hard to see anything so they went back inside their house and called the police. Later the police began a search that continued throughout the night until 0930 the next morning, when the aircraft wreckage was located about one-quarter mile from the farm house. The pilot was fatally injured.

¹ All times are MDT (Coordinated Universal Time minus six hours) unless otherwise noted.

Other Factual Information

The aircraft was equipped with a global positioning system (GPS) navigation receiver, and the pilot was familiar with the operation of the unit. The pilot had used the aircraft's radio several times on his flight into Spirit River; there was no evidence to indicate that the radio was unserviceable. The propeller blade damage and twist were consistent with considerable power being produced at the time of impact. The aircraft systems were examined to the degree possible, and no evidence of a malfunction was found. A review of the journey and technical log-books after the accident showed that the aircraft was maintained in accordance with existing regulations and approved procedures, and there were no deferred unserviceabilities.

The accident site was on the direct track from Spirit River to St. Paul. The aircraft struck the ground in a right-wing-low, nose-down attitude. During the break-up sequence, pieces were scattered along a 170-foot wreckage trail. The airspeed indicator face shows a needle impact mark indicating a speed of over 190 mph. The ground scars and the wreckage distribution indicate that the aircraft was in a high-speed spiral dive on ground impact.

The emergency locator transmitter (ELT) switch was in the "ARM" position and the external antenna was broken off. No signal was reported, and when the ELT (Pointer Centrum Model C4000) was checked, no signal was being transmitted. After the switch was recycled, the ELT functioned normally. It was not determined why the ELT did not function properly on impact.

An advisory circular entitled *Pilot's Spatial Disorientation*, issued by the U.S. Federal Aviation Administration, explains the hazards of disorientation as a result of loss of visual reference with the ground. The circular states the following:

Surface references and the natural horizon may become obscured, although visibility may be above visual flight rule minimum. Lack of natural horizon or surface reference is common on overwater flights, at night, and especially at night in extremely sparsely populated areas, or in low visibility conditions.

The accident location was in a sparsely populated farming area where the lack of ground lights would have precluded good surface references.

The pilot began his flying training in August 1995 and received a private pilot licence on 02 May 1996. The pilot then enrolled in a commercial pilot course during which he received a night endorsement on 27 August 1996. The pilot had a total of 130 flight hours, 126 on the Cessna 150/152 aircraft and 4 on the Cessna 172RG. During the instruction for his licence and night endorsement, the pilot received a combined total of 11 hours of simulated instrument training. The training, as outlined in the Transport Canada *Flight Instructor Guide*, is designed to provide the pilot with a basic understanding of instrument flying. The training included straight-and-level flight, climbs and descents, turns, and unusual attitudes. The pilot was tested on these exercises as part of his private pilot flight test. The training for the night endorsement was similar, but no flight test was required. The majority of the instrument training was conducted using all the aircraft

instruments available with an outside-view limiting device. The night training received by the pilot was conducted around the city of Edmonton, a heavily populated area with lots of ground lights. None of the training was conducted in actual instrument conditions.

At the time of the occurrence, a quasi-stationary maritime cold front extended from a low pressure system in northwestern Alberta and crossed the northeastern portion of the province. The flight planned route from Spirit River to St. Paul crossed the cold front in the vicinity of Smoky Lake. The weather conditions along the route went from clear skies with a few clouds around the Spirit River area, to VFR ceilings within 60 to 90 nm west of the cold front, to low ceilings with poor visibilities in rain and fog in the vicinity of the cold front. To the east of the cold front, VFR stratocumulus ceilings were reported across much of the region.



The pilot called the FSS on the afternoon of 16 September for a weather briefing. He only asked for and received the weather conditions for the St. Paul area. Approximately 45 minutes before departure, the pilot called for an updated weather briefing. He was given the actual reported weather for Slave Lake (100 nm west of the cold front), Cold Lake (70 nm east of the cold front), and Lloydminster (80-90 nm east of the cold front) as well as the terminal forecast for Cold Lake. The pilot was told of marginal weather with stratocumulus ceilings and rain showers from Slave Lake along the remainder of the route to his destination. The terminal forecast for Cold Lake (40 nm from St. Paul) between 2200 to 0200 was for weather conditions as low as three miles in fog and rain with ceilings of 800 feet above ground level.

Analysis

No radio transmissions from the aircraft were reported; therefore, it could not be determined if the pilot attempted to contact the Grande Prairie FSS after take-off. It is possible that the pilot felt that he did not have to call the FSS to open his flight plan, or he may have been flying too low to communicate along the route.

Weather conditions were good when the pilot departed Spirit River, but deteriorated as the pilot proceeded along his route. In the vicinity of the front, with lower cloud and reduced visibility in fog and rain, and over a sparsely populated area at night, surface references and the natural horizon would have become obscured. The pilot would have been forced to fly using the aircraft's instruments; however, his instrument time was limited to the training environment, and he likely had never flown in cloud or in conditions where the horizon was not

visible. The pilot likely found it difficult to fly the aircraft on instruments, became disoriented, and lost control of the aircraft. The aircraft entered into a spiral dive from which the pilot did not recover.

Findings

1. The weather briefing indicated that the weather was marginal for the intended flight.
2. The pilot did not make radio contact with any FSS facility en route.
3. The pilot attempted to continue visual flight in deteriorating weather conditions.
4. The accident occurred at night, in a sparsely populated area, and in low visibility conditions.
5. The pilot was licensed and qualified for the flight, but it is likely that he had not previously flown in conditions that required flying solely by reference to the aircraft instruments.
6. It could not be determined why the ELT did not function properly at the time of impact.

Causes and Contributing Factors

The pilot continued flight into deteriorating weather conditions, probably became disoriented, and lost control of the aircraft. The aircraft entered a spiral dive from which the pilot did not recover.

This report concludes the Transportation Safety Board's investigation into this occurrence. Consequently, the Board, consisting of Chairperson Benoît Bouchard, and members Maurice Harquail, Charles Simpson and W.A. Tadros, authorized the release of this report on 14 May 1997.