National Transportation Safety Board
Washington, DC 20594

Brief of Accident

Adopted 03/30/2004

FTW03FA182
File No. 15136 | 07/08/2003 | McKinney, TX | Aircraft Reg No. N166ME | Time (Local): 11:44 CDT

Make/Model:	Cessna / 172S
Engine Make/Model:	Textron Lycoming / IO-360-L2a
Aircraft Damage:	Destroyed
Number of Engines:	1
Operating Certificate(s):	None
Type of Flight Operation:	Instructional
Reg. Flight Conducted Under:	Part 91: General Aviation

	Fatal	Serious	Minor/None
Crew	2	0	0
Pass	0	0	0

Last Depart. Point:	Addison, TX
Destination:	Local Flight
Airport Proximity:	Off Airport/Airstrip

Condition of Light:	Day
Weather Info Src:	Weather Observation Facility
Basic Weather:	Visual Conditions
Lowest Ceiling:	2800 Ft. AGL, Broken
Visibility:	10.00 SM
Wind Dir/Speed:	180 / 008 Kts
Temperature (°C):	31
Precip/Obscuration:	

Pilot-in-Command Age: 28

Certificate(s)/Rating(s)
Flight Instructor; Commercial; Multi-engine Land; Single-engine Land

Instrument Ratings
Airplane

Flight Time (Hours)

Total All Aircraft:	1100
Last 90 Days:	Unk/Nr
Total Make/Model:	Unk/Nr
Total Instrument Time:	UnK/Nr

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HISTORY OF FLIGHT

On July 8, 2003, approximately 1144 central daylight time, a Cessna 172S single-engine airplane, N166ME, was destroyed when it impacted terrain during a forced landing following an in-flight collision with a bird approximately two miles west of Aero Country Airport (T31), near McKinney, Texas. The flight instructor and student pilot sustained fatal injuries. The airplane was registered to FlightProcedure, Inc., of Denton, Texas, and operated by Monarch Air, of Addison, Texas. Visual meteorological conditions prevailed, and a flight plan was not filed for the 14 Code of Federal Regulations Part 91 instructional flight. The local flight originated from the Addison Airport (ADS), Addison, Texas, approximately 1135.

Information obtained from the Dallas-Fort Worth Air Route Traffic Control Center (ARTCC) revealed the aircraft departed ADS and was enroute to a designated company practice area. ARTCC received the following radio communication transmissions:

At 1143:37, N166ME transmitted; "mayday, mayday, mayday, regional approach 166ME, we're going down."

At 1143:42, ARTCC transmitted; "166ME, regional approach, what's your position and what can I do for you?"

At 1143:46, N166ME; "yah, send somebody to pick us up, I think we're going to be fine, we ah hit ah bird, but ah we got ah, go down, we can't keep it straight with the power on, we're right up here south of 380"

At 1143:58, ARTCC; "roger sir, I am showing a, ah about two miles west of aero country airport, is that you?"

At 1144:02, N166ME; "that's me we're going down now, I'm going to disconnect radio contact"

At 1144:06, ARTCC; "6ME, can you tell me your type aircraft, and how many on board?"

No further radio transmissions were received from N166ME.

Radar data received from the ARTCC indicated N166ME was flying on a northerly heading at approximately 1,900 feet msl from 1137:03 to 1143:03. At 1143:03, the radar data indicated the airplane began a descending right turn. At the approximate time of the mayday call, radar data indicates the airplane was on a heading of 056 degrees at 1,300 feet msl with a groundspeed of 116 knots. At the approximate time of the pilot's last radio transmission, radar data indicated the airplane at an altitude of 800 feet msl on a heading of 068 degrees, with a groundspeed of 96 knots.

A witness located near the accident site reported seeing the airplane fly over the area at approximately 500 to 1,000 feet agl, and the "wings of the Cessna 172 were pitching (alternating) up and down looking uncontrollable. The tail of the airplane was swinging from side to side." The witness lost sight of the airplane when it descended below a tree line.

PERSONNEL INFORMATION

The flight instructor held a commercial pilot certificate with airplane single-engine land, airplane multi-engine land, and instrument airplane ratings. The instructor held a certified flight instructor's certificate with airplane single engine land, airplane multi-engine land, and instrument airplane. The instructor was issued a first-class medical certificate on May 30, 2003, with the limitation of "MUST WEAR CORRECTIVE LENSES." At the time of his last medical application, the instructor reported that he had accumulated a total of 1,100 hours of flight time. The instructor's logbook was not located.

The student pilot was issued a student pilots certificate for airplane single-engine land, and a third class medical certificate on April 25, 2003, with the limitation of "MUST HAVE GLASSES AVAILABLE FOR NEAR VISION." A review of the student pilot's logbook revealed he had accumulated a total of 30 hours of flight time, which was conducted with the flight instructor since May of 2003. According to the student's logbook entries, the student pilot had three previous flights involving emergency procedure instruction.

AIRCRAFT INFORMATION

The 2000-model Cessna 172S airplane, serial number 8446, was a high wing, semimonocoque design airplane, with a fixed landing gear. The airplane was

powered by a normally aspirated, direct drive, air-cooled, horizontally opposed, fuel injected, four-cylinder Textron-Lycoming IO-360-L2A engine, rated at 180 horsepower. The airplane was configured to carry a maximum of four occupants.

The airplane was issued a standard airworthiness certificate on April 27, 2000. According to the airframe and engine logbooks, the airplane's most recent 100-hour/annual inspection was on June 6, 2003, with a total time of 1433.0 hours. At the time of the accident, the airframe and engine had accumulated a total of 1461.1 hours, 28.1 hours since the last inspection. No open maintenance discrepancies were noted within the aircraft logbooks.

According to the Federal Aviation Administration approved Cessna 172S information manual, in the most forward CG configuration, the stall speed with flaps retracted with a zero degree bank is 49 KIAS. With 10 degrees of flaps, the stall speed is 43 KIAS. With 30 degrees of flaps, the stall speed is 40 KIAS.

The Cessna 172S information manual states that the precautionary landing with engine power procedure is the following:

1. Passenger Seat Backs - MOST UPRIGHT POSITION.
2. Seats and Seat Belts - SECURE.
3. Airspeed - 65 KIAS
4. Wing Flaps - 20 Degrees
5. Selected Field - FLY OVER Note terrain and obstructions then retract flaps upon reaching a safe altitude and speed.
6. Avionics Master Switch and Electrical Switches - OFF.
7. Wing Flaps 30 degrees (on final approach).
8. Airspeed - 65 KIAS
9. Master Switch - OFF.
10. Doors - UNLATCH PRIOR TO TOUCHDOWN.
11. Touchdown - SLIGHTLY TAIL LOW.
12. Ignition Switch - OFF.
13. Brakes - APPLY HEAVILY.

METEOROLOGICAL INFORMATION

The closest weather reporting station to the accident site was located at Mc Kinney Municipal Airport (TKI), near Mc Kinney, Texas, approximately 9 nautical miles east of the accident site. At 1153, the automated surface observing system at TKI reported wind from 180 degrees at 8 knots, visibility 10 statute miles, cloud condition broken at 1,800 feet, temperature 88 degrees Fahrenheit, dew point 72 degrees Fahrenheit, and an altimeter setting of 30.14 inches of Mercury.

WRECKAGE AND IMPACT INFORMATION

The main wreckage was located in a field approximately two miles west of T31. The Global Positioning System (GPS) coordinates recorded at the accident site using a hand held GPS unit were 33 degrees 12.906 minutes north latitude and 096 degrees 46.222 minutes west longitude, at an elevation of approximately 800 feet msl. The airplane impacted soft terrain on a magnetic heading of 225 degrees, and came to rest upright on a heading of 120 degrees, approximately 25 feet right of the point of impact. The wreckage energy path measured approximately 60 feet in length.

The initial ground scar measured approximately 28 feet in length, and contained fractured pieces of wingtip, and portions of a red lens, consistent with the

navigational lens. The ground scar connected to a crater, which was approximately three and one half feet in length, and nine inches deep. The crater featured a rounded hole approximately four inches wide, which was consistent with the tip of the propeller spinner. Another ground scar originated from the crater, measuring approximately 17 feet in length, consistent with the length of the right wing. The wreckage distribution path contained small fractured pieces of the left wing tip, left navigation and strobe lights, left strobe light power pack and wiring harness, the left wiring harness of the left navigation light, and multiple pieces of plexi-glass.

The leading edge of the left wing and the leading edge outboard of the wing strut attach point on the right wing were crushed aft. The left wing leading edge skin area inboard of the landing light cutout was folded inboard, and outboard from the landing light cutout was folded outboard. The aileron and flap control surfaces remained attached at the respective attach points. The left wing was separated from its respective mounts and remained attached to the fuselage by the control cables. The right wing was partially separated from the fuselage. The left and right wing struts remained attached. The tip of the left wing was found bent upwards approximately 45 degrees where it started approximately three feet inboard from the wingtip and progressing to the rear spar at the wingtip rib attach point.

The empennage remained intact and was undamaged. The horizontal and vertical stabilizers remained intact, and respective flight control surfaces and cables remained attached.

Flight control continuity was established at the accident site from all control surfaces to their respective cockpit controls.

The left and right main landing gear remained attached to the fuselage. The nose wheel landing gear was crushed aft and remained attached to the firewall. Fuel was noted in the left and right fuel tanks and both the left and right fuel caps were intact and secure. Both cabin doors were found open with the latching handles secured and the retaining pins extended.

The engine was partially separated from the firewall and crushed aft.

The left control yoke was separated at the control lock pinhole. The right control yoke was separated approximately two inches forward of the yoke handle. The cockpit instrument panel and firewall were bent and displaced on top of the engine. Most of the cockpit instrumentation was separated from the panel. The engine tachometer displayed 980 rpm, with a time of 1461.1 hours. The altimeter displayed 890 feet msl. The battery side of the electrical master switch was ON, and the alternator side of the switch was OFF. The throttle was found in the full forward position, and the mixture in the full rich position. The fuel selector was found to the right of the "BOTH" position. The electrical flap switch was found between the 10 and 20 degree setting.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the flight instructor by the Collin County Office of the Medical Examiner on July 9, 2003. According to the report, "The cause of death...[was] result of injuries sustained during an aircraft accident." Toxicological tests performed by the Federal Aviation Administration's Civil Aeromedical Institute (CAMI) were negative for carbon monoxide, drugs, and alcohol.

An autopsy was performed on the student pilot by the Collin County Office of the Medical Examiner on July 9, 2003. According to the report, "The cause of death...[was] result of injuries sustained during an aircraft accident." Toxicological tests performed by the Federal Aviation Administration's Civil Aeromedical Institute (CAMI) were negative for carbon monoxide, drugs, and alcohol.

TESTS AND RESEARCH

On July 09, 2003, further examination of the airplane by the NTSB investigator-in-charge (IIC) and airframe manufacturer was conducted at the facilities of Air Salvage of Dallas, near Lancaster, Texas,

Examination of the left wing revealed a portion of the leading edge was displaced aft to the forward wing spar, approximately one inch outboard from the landing light cutout measuring approximately three feet in length.

The leading edge of the right wing was crushed aft to the forward wing spar just outboard from the windshield. The damage was consistent with an impact from the upper right corner of the cabin structure, just aft of the engine cowling, where a handhold is mounted.

The left seat was bent and remained attached to both seat rails. The inboard and outboard seat rails remained intact, and the inboard seat rail was bent upwards. The right seat remained attached to both seat rails. The inboard and outboard seat rails remained intact.

The wing flap actuator measured 4 1/4", which according to the airframe manufacturer representative, equated to approximately 20-degree flap extension. The elevator trim tab was observed in the three-degree trailing edge up position.

Engine continuity was established by rotating the crankshaft by hand using the propeller. Continuity was established throughout the engine crankshaft, exhaust / intake valves, and accessories gears. Magneto timing was 25-degrees top-dead-center (TDC). The right magneto was removed. When rotated by hand, the right magneto produced a spark on all four leads. The top spark plugs were removed and examined. When compared to the Champion Aviation Check-A-Plug Chart, all spark plugs displayed signatures consistent with normal operation.

The propeller spinner was intact and displaced to the side. Both propeller blades remained attached to the propeller hub assembly. The propeller blade opposite of the spinner deflection displayed a very slight "S" bending with no leading edge damage and no chordwise scratching. The other blade was slightly bent aft at the midpoint of the blade. The propeller blade displayed chordwise scratching, and no leading edge damage.

Information obtained by the NTSB IIC revealed that a landfill and wildlife refuges are located near TKI to the southwest. Both report having a high degree of bird activities.

ADDITIONAL INFORMATION

The wreckage was released to the owner's representative on November 25, 2003.

The National Transportation Safety Board determines the probable cause(s) of this accident as follows.
The CFI's failure to maintain airspeed sufficient for flight resulting in an inadvertent stall/spin during the forced landing. A contributing factor was the impact with a bird, which affected the performance of the airplane.