



Aviation Investigation Final Report

Location:	Georgetown, Louisiana	Accident Number:	DFW07FA008
Date & Time:	October 21, 2006, 19:26 Local	Registration:	N470
Aircraft:	North American T-28C	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The commercial pilot departed on a long cross-country flight in his single-engine experimental airplane that just had an overhauled engine installed. Prior to departure, he purchased 100 gallons of fuel but did not obtain a weather briefing or file a flight plan. While en route, as day turned into night, the pilot, who was receiving flight following services from air traffic control (ATC), announced to ATC that he needed to divert to another airport that was 40 miles south of his position for fuel. He also stated that he needed to descend to a lower altitude. A review of ATC and weather radar data revealed that as the airplane proceeded toward this airport, he flew through an area of light to moderate rain activity. Radar data revealed that the airplane unexpectedly initiated a left turn toward the east-northeast and disappeared from radar. According to the last 60 seconds of radar data, the airplane made several climbs and descents and the ground speed decelerated from 173 knots to 113 knots before the data ended. The airplane came to rest in a heavily wooded terrain on a heading of 331 degrees, approximately 2 miles northwest of the last radar return and approximately 16 miles southeast of another airport that offered fuel services. The airplane impacted terrain in a near vertical descent, and the entire engine assembly, including two propeller blades, were imbedded about 8-10 feet into the ground. There was no evidence of a fuel spill at the accident site. The airplane was reported to have a fuel endurance range of 2.5 hours. Examination of the airplane did not reveal any pre mishap deficiencies with the airframe or the engine.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to maintain control of the airplane which led to an aerodynamic stall. A

contributing factor was the dark night.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT

Phase of Operation: MANEUVERING

Findings

1. (F) LIGHT CONDITION - DARK NIGHT
 2. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND
 3. (C) STALL - INADVERTENT - PILOT IN COMMAND
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Occurrence #2: IN FLIGHT COLLISION WITH OBJECT

Phase of Operation: DESCENT - UNCONTROLLED

Findings

4. OBJECT - TREE(S)

Factual Information

HISTORY OF FLIGHT

On October 21, 2006, approximately 1926 central daylight time, a 1956 vintage North American T-28C single-engine experimental airplane, N470, was destroyed when it impacted terrain following a loss of control while maneuvering near Georgetown, Louisiana. The commercial pilot, sole occupant of the airplane, was fatally injured. The airplane was registered to and operated by the pilot. No flight plan was filed for the cross-country flight that originated from the St. Louis Downtown Airport, near Cahokia/St. Louis, Illinois, about 1700, and was destined for the Lake Charles Regional Airport, near Lake Charles, Louisiana. Night instrument meteorological conditions prevailed for the personal flight conducted under 14 Code of Federal Regulations Part 91.

The flight originated earlier in the day from Oshkosh, Wisconsin, and the pilot flew to St. Louis, Illinois, where he had lunch with a friend. During the intermediate stop at St. Louis, the airplane was serviced with 100-gallons of 100 LL aviation fuel.

A review of several Automated Flight Service Stations (AFSS) records revealed that the pilot did not obtain a weather briefing prior to his departure from St. Louis, Illinois. A review of air traffic control communications revealed that while en route to Lake Charles, the pilot contacted Polk Approach, Polk, Louisiana, at 1919 and stated, "It looks like I'll have to change destination to AEX [Alexandria, Louisiana Airport] for fuel." A controller told the pilot to report the airport in sight. The pilot responded that his handheld GPS indicated that he was 40-miles due north of the airport and 14 minutes away.

At 1923:57, the pilot asked the controller for the weather conditions at the Alexandria Airport. The controller responded that the weather was reported as calm wind, visibility 7 miles, ceiling 1,000-foot overcast, temperature 18 degrees Celsius, dewpoint 17 degrees Celsius, and a barometric pressure setting of 29.86 inches of Mercury. The pilot then asked which runway was in use, and the controller responded "Runway 14."

At 1924:26, the pilot announced that, "I'll have to descend to about 2,000 feet over here..." The controller responded, "N470 roger." This was the last recorded communication from the pilot. At 1926:08, an air traffic controller confirmed that radar contact had been lost with N470 and that he was unable to re-establish communication with the pilot.

A review of radar data revealed the accident airplane traveled from north to south toward the Alexandria Airport. Examination of the last 60 seconds of radar data indicated that the airplane was on a southerly course before it began a left turn toward the east-northeast. During this time, the airplane made 12 ascents and descents and its vertical speed varied

between positive 2,137 and negative 2,514 feet per minute (fpm), between an altitude of 3,300 and 4,200 feet mean sea level (msl). In addition, the airplane's ground speed decelerated from 173 knots to 113 knots before the data ended at 1925:26 at 31 degrees, 41 minutes north latitude and 092 degrees, 30 minutes west longitude.

Weather radar images taken at 1924 and 1930 indicated an area of light to moderate echoes were depicted just north of the accident location. These echoes appeared to be drifting east and intensifying. In addition, a review of the image taken at 1930 indicated a level 5 storm cell west of the accident location.

PERSONNEL INFORMATION

The 44-year-old pilot held a commercial pilot certificate for airplane single-engine land, instrument airplane. A review of copies of his logbook revealed that the last entry was made on July 25, 2006. At that time, he had accrued a total of 977.2 hours, of which, 386.5 hours were in the T-28C model aircraft.

METEOROLOGICAL INFORMATION

Weather reported at AEX at 1853 was calm wind, visibility 7 statute miles, ceiling overcast at 1,000 feet, temperature 18 degrees Celsius, dewpoint 17 degrees Celsius, and a barometric pressure setting of 29.86 inches of Mercury.

Weather reported at 1953 was calm wind, visibility 7 statute miles, ceiling 1,000 broken, 1,600 feet broken, 2,700 feet overcast, 18 degrees Celsius, dewpoint 17 degrees Celsius, and a barometric pressure setting of 29.87 inches of Mercury. In the remarks section of the weather report, it stated that rain began to fall at 1935 and ended at 1944.

An Instrument Flight Rules (IFR) Airmen Meteorological (AIRMET) warning was issued at 1800 for the area 20 miles northwest of the Alexandria Airport for occasional ceilings below 100 feet, visibility 3 miles and less, clouds, precipitation, mist and fog.

According to Sun and Moon data obtained from the United States Naval Observatory, the sunset occurred at 1831 and the end of civil twilight occurred at 1855 on the day of the accident.

AIRCRAFT INFORMATION

The airplane's last condition inspection was completed on March 15, 2006. At that time, the airplane had accrued a total of 10,304.1 hours in service, and the Hobbs meter was 377 hours.

According to a airframe and power plant mechanic, who had recently performed maintenance on the airplane, the pilot was in the process of "re-doing" the entire airplane, which included re-wiring the airplane's electrical system. He added that during a practice formation flight in

Oshkosh, Wisconsin, in July 2006, the pilot over boosted the radial engine, which resulted in the master rod failing. The pilot was able to land safely at the Oshkosh Airport, but the airplane remained in Oshkosh until the mechanic, who was based in Florida, was able to install a new overhauled engine and propeller on October 15, 2006. After the engine was installed, the mechanic, along with the pilot, performed a test flight. According to the mechanic, the pilot sat in the front seat for the test flight. The mechanic noted that during the flight, the pilot did not properly adjust the mixture or close the cowl flap. However, there were no anomalies noted with the engine during the flight test and "everything was smooth." After the mechanic returned to Florida, the pilot made three additional flights before leaving on the accident flight to Louisiana.

WRECKAGE AND IMPACT INFORMATION

An on-scene examination of the airplane was conducted on October 24, 2006. All major components of the airplane were located at the accident site. The airplane came to rest in heavily wooded terrain on a measured heading of 331-degrees, approximately 16 miles southeast of the David G Joyce Airport (0R5), Winnfield, Louisiana, and approximately 2-miles northwest of the last radar return.

The initial impact point was the tip of a tree that was located within 20 feet of where the main wreckage came to rest. The airplane impacted terrain in a near-vertical nose-down attitude, and the entire engine assembly, including two propeller blades, were imbedded in about 8 to 10 feet into the ground. The other propeller blade came to rest about 20-feet south of the main wreckage. There was no evidence of a fuel spill at the accident site.

The right wing exhibited extensive chordwise crushing. The left wing also exhibited chordwise crushing, and had fragmented into several sections. The tail section was found crushed and folded over on top of the main wreckage. The fuselage also sustained extensive crushing.

The airplane wreckage was recovered to Air Salvage of Dallas, where the NTSB Investigator-In-Charge (IIC) conducted a detailed examination of the airframe and the engine.

Examination of the 9-cylinder radial engine revealed that it sustained extensive impact damage and was compacted with clay during the accident sequence. However, continuity of the engine was established for 6 of the 9 cylinders. The planetary gears were exposed due to impact, and oil was present in the engine. The propeller hub was also cracked and leaking oil.

The engine driven fuel pump was removed and examined. Examination of the pump revealed a 270-degree tear around the top plunger assembly. The rubber diaphragm material appeared to be distressed from expansion and contraction of fuel. The engine's electric boost pump was then removed and examined. The examination revealed that the impeller blades were sheared, indicating that it was turning at the time of impact. The purpose of the electric boost pump was to automatically override the engine driven fuel pump when/if it failed, so there would not be an interruption of power.

One propeller blade remained tight in the hub, was bent slightly aft, and exhibited about 1-inch of polishing along the entire leading edge of the blade. The second blade had separated from the hub, but was found near the engine. It had a 6 to 7-inch-long section of shank missing and there were some chordwise scratches on the front face of the blade. The blade also exhibited nicks on the leading edge from the tip of the blade to mid-span, along with some polishing. The third blade had sheared off at the hub and was straight. There was polishing to the leading edge of the blade.

Flight control continuity was established for all flight control surfaces from the respective surface to the cockpit. Both main landing gear actuators were measured, and one actuator measured approximately 7 3/4-inches, and the other was bent and measured approximately 6-inches.

The altimeter was located in the wreckage and indicated an altitude of 650-feet msl, and a barometric pressure setting of 29.98 inches of Mercury. The airspeed indicator was also located, but part of the faceplate and internal mechanism had separated from the housing. However, the pointer was still attached and was jammed in place by the remaining portion of faceplate. The pointer indicated a speed of 235 knots. Further examination of the pointer revealed that it had made a horizontal scrape mark on the face of the instrument at this 235-knot mark. The vertical speed indicator was damaged and an accurate reading could not be determined.

The faceplate of the electrical powered attitude indicator was damaged. The unit was disassembled and the gyro was removed. Examination of the interior of the gyro housing revealed little to no scoring.

TESTS

The engine was equipped with a JPI engine analyzer, which was removed from the engine and downloaded by the manufacturer. A review of the data revealed that the analyzer recorded engine activity for the entire accident flight before it abruptly stopped recording. Prior to the loss of power, engine temperatures were constant.

Further review of the data revealed that the time of the power interruption recorded by the JPI analyzer's internal clock (1906) and the pilot's last radio communication (1924) was approximately 18 minutes. According to a representative of JPI, the analyzer's internal clock is a real-time chip, similar to a personal computer, and is usually accurate within a few seconds or even minutes. However, the user of a JPI analyzer can manually reset the clock, which could explain the disparity between the two recorded times.

Two Garmin handheld global positioning system (GPS) units were found in the wreckage and submitted to the Safety Board's Research and Engineering Laboratory for examination. Due to the complexity of retracting data from these units, no information was available from the units

at the time this report was produced.

MEDICAL/PATHOLOGICAL INFORMATION

An autopsy was conducted on October 23, 2006, by the Jefferson County Forensic Center, in Harvey, Louisiana. According to the autopsy report, the pilot's cause of death was determined to be "multiple traumatic injuries."

Toxicological testing conducted by the FAA Toxicology Accident Research Laboratory, near Oklahoma City, Oklahoma, revealed negative results for carbon monoxide, ethanol, cyanide, and illegal drugs.

ADDITIONAL INFORMATION

The IIC interviewed a T-28C flight instructor, who also provided instruction to the accident pilot. He stated that the T-28C airplane has an average fuel endurance of approximately 2.5 hours. The conditions (weather, engine performance) would have to be "perfect" for the airplane to have a fuel endurance of 3 hours. The instructor said that in the case of an engine failure, the pilot "must get the nose of the airplane over to 130 knots for best glide speed and keep the wings level, at this airspeed, the airplane is very controllable." In addition, the airplane would descend quickly (about a 5:1 ratio) if the engine failed and a pilot would have to be alert to keep the airplane in a safe flight attitude. The instructor added that the airplane would stall at 78 knots and that it would take a pilot approximately 1,500-feet of altitude to recover. He also stated that he advises his students not to fly in instrument meteorological conditions unless there is two pilots onboard the airplane.

Pilot Information

Certificate:	Commercial	Age:	44, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Unknown
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 3 With waivers/limitations	Last FAA Medical Exam:	November 1, 2006
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	977 hours (Total, all aircraft), 386 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	North American	Registration:	N470
Model/Series:	T-28C	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Experimental (Special)	Serial Number:	1405323
Landing Gear Type:	Retractable - Tricycle	Seats:	2
Date/Type of Last Inspection:	October 1, 2007 Condition	Certified Max Gross Wt.:	8600 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	10564.1 Hrs as of last inspection	Engine Manufacturer:	Wright
ELT:	Not installed	Engine Model/Series:	R-1820
Registered Owner:	Sleiman S. Salibi	Rated Power:	1425 Horsepower
Operator:		Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Night
Observation Facility, Elevation:	AEX,89 ft msl	Distance from Accident Site:	25 Nautical Miles
Observation Time:	18:53 Local	Direction from Accident Site:	300°
Lowest Cloud Condition:		Visibility	7 miles
Lowest Ceiling:	Broken / 1000 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	/	Turbulence Type Forecast/Actual:	/
Wind Direction:		Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.87 inches Hg	Temperature/Dew Point:	18°C / 17°C
Precipitation and Obscuration:	In the vicinity - Showers - Mist		
Departure Point:	St. Louis, IL (CPS)	Type of Flight Plan Filed:	None
Destination:	Lake Charles, LA (LKC)	Type of Clearance:	VFR
Departure Time:	17:00 Local	Type of Airspace:	

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Fatal	Latitude, Longitude:	31.776111,-92.528053

Administrative Information

Investigator In Charge (IIC):	Yeager, Leah
Additional Participating Persons:	Clyde O'Neill; FAA FSDO; Baton Rouge, LA
Original Publish Date:	January 31, 2008
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=64738

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