



Aviation Investigation Final Report

Location:	Birmingham, Alabama	Accident Number:	ERA13LA012
Date & Time:	October 6, 2012, 12:17 Local	Registration:	N80KW
Aircraft:	CIRRUS DESIGN CORP SR22	Aircraft Damage:	Substantial
Defining Event:	Loss of control in flight	Injuries:	1 Serious, 1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The airplane was in instrument meteorological conditions, and the pilot intended to fly an instrument landing system approach. Review of non-volatile memory data revealed that the autopilot approach mode was armed as the airplane intercepted the localizer course and was descending toward 2,600 feet mean sea level (msl). At that time, the autopilot was selected to vertical speed (VS) mode with the altitude armed rather than selected to the altitude mode, which is one of the criteria for automatically arming the glideslope (GS) mode later in the approach. About 1 minute later, the autopilot automatically cancelled the VS mode and switched to altitude mode as the airplane reached 2,600 feet msl. However, at that time the airplane was above the glideslope by 53 percent needle deflection. The autopilot will not automatically arm the GS mode unless, in addition to the altitude mode being selected, the airplane is more than 10 percent needle deflection below the glideslope. As a result, the airplane remained above the glideslope until the autopilot was disconnected about 1 minute later. The pilot then attempted to hand-fly a missed approach; however, he was unable to maintain the heading or altitude assigned by air traffic control. He subsequently lost control of the airplane during a turn and elected to deploy the airplane's parachute system. The airplane came to rest in a vacant lot.

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 airplane control during a missed approach in instrument meteorological conditions. Contributing to the accident was the pilot's overreliance on the autopilot system and his inability to hand-fly the airplane once the autopilot was disconnected.

Findings

Personnel issues	Lack of action - Pilot
Aircraft	Altitude - Not attained/maintained
Aircraft	Directional control - Not attained/maintained
Personnel issues	Use of automation - Pilot
Aircraft	Autopilot system - Incorrect use/operation

Factual Information

History of Flight

Approach-IFR missed approach	Loss of control in flight (Defining event)
Approach-IFR missed approach	Miscellaneous/other
Emergency descent	Collision with terr/obj (non-CFIT)

On October 6, 2012, at 1217 central daylight time, a Cirrus SR22, N80KW, operated by a private individual, was substantially damaged during impact with terrain, after deployment of the Cirrus Airplane Parachute System (CAPS), following a loss of control during a missed approach at Birmingham International Airport (BHM), Birmingham, Alabama. The private pilot incurred minor injuries and the passenger was seriously injured. The personal flight was conducted under the provisions of 14 Code of Federal Regulations Part 91. Instrument meteorological conditions prevailed and an instrument flight rules flight plan was filed for the flight that departed Charles B Wheeler Downtown Airport (MKC), Kansas City, Missouri; destined for BHM.

The pilot stated that while on the instrument landing system approach to runway 6 at BHM, he reported missed approach at 2,000 feet mean sea level (msl) to the BHM air traffic control tower. The tower controller instructed the pilot to fly the runway heading; however, the pilot reported to the controller that he was unable due to weather. The tower controller then instructed the pilot to fly a heading of 180 degrees and climb to 4,000 feet. The pilot acknowledged the instruction and during the turn, lost control of the airplane. He then observed the altimeter indicating a descent through 1,700 feet and elected to deploy the CAPS. The airplane subsequently descended via parachute and came to rest in a commercial parking lot, about 2 miles south of BHM.

Review of Federal Aviation Administration (FAA) recorded radio communications between N80KW and BHM tower revealed that after the pilot declared a missed approach, the tower controller instructed the pilot to fly runway heading and climb to 4,000 feet. The pilot replied "Okay, I'm way off of runway heading..." and did not make any mention of not being able to turn due to weather. The controller then instructed the pilot twice to climb to 4,000 feet and make a left turn to 360 degrees as the airplane was approaching an antenna to the south. After a third query, the pilot replied that he was "going, trying to get around." About 20 seconds later, the pilot reported that he was "going down."

Examination of the airplane by an FAA inspector revealed substantial damage to the fuselage and a puncture of the left wing near the left main landing gear.

The airplane was equipped with an Avidyne primary flight display (PFD), which was forwarded to the NTSB Vehicle Recorder Laboratory, Washington, DC. The unit contained non-volatile memory, which was successfully downloaded. Review of the data revealed that the autopilot was engaged shortly after takeoff and remained on until 1215. At 1213, the autopilot approach mode was armed as the airplane was descending to 2,600 feet msl and had intercepted the localizer course. The autopilot was selected to vertical speed (VS) mode with the altitude armed, rather than the altitude mode. At 1214, the VS mode was automatically cancelled (and the autopilot automatically switched to altitude mode) as the airplane reached 2,600 feet; however, at that time the airplane was above the glideslope (GS) by 53 percent needle deflection. The airplane remained above the GS until the autopilot was disconnected at 1215 and the CAPS was deployed about 1217. According a representative from the PFD manufacturer, the autopilot would automatically arm the GS mode, provided seven criteria were met. Two of the seven criteria were altitude mode engaged and airplane no more than 10 percent needle deflection below GS (airplane above GS).

Review of the data did not reveal any preimpact mechanical malfunctions with the airplane, nor did the pilot report any. The pilot reported a total flight experience of 1,944.7 hours; of which, 1,450 hours were in the same make and model as the accident airplane. He reported 17 and 75 total hours of actual and simulated instrument experience, respectively.

The recorded weather at BHM, at 1153, included an overcast ceiling at 700 feet above ground level (1,350 msl).

Pilot Information

Certificate:	Private	Age:	60, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 Without waivers/limitations	Last FAA Medical Exam:	January 31, 2012
Occupational Pilot:	No	Last Flight Review or Equivalent:	September 23, 2011
Flight Time:	1948 hours (Total, all aircraft), 1450 hours (Total, this make and model), 45 hours (Last 90 days, all aircraft), 24 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	CIRRUS DESIGN CORP	Registration:	N80KW
Model/Series:	SR22	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	1879
Landing Gear Type:	Tricycle	Seats:	4
Date/Type of Last Inspection:	March 20, 2012 Annual	Certified Max Gross Wt.:	3400 lbs
Time Since Last Inspection:	112 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	1612 Hrs as of last inspection	Engine Manufacturer:	CONT MOTOR
ELT:	Installed, not activated	Engine Model/Series:	IO-550-N
Registered Owner:	Two Flyers Llc	Rated Power:	310 Horsepower
Operator:	Billy Sprague	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	Condition of Light:	Day
Observation Facility, Elevation:	BHM,650 ft msl	Distance from Accident Site:	2 Nautical Miles
Observation Time:	11:53 Local	Direction from Accident Site:	20°
Lowest Cloud Condition:		Visibility	10 miles
Lowest Ceiling:	Overcast / 700 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	9 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	330°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.07 inches Hg	Temperature/Dew Point:	18°C / 16°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Kansas City, MO (MKC)	Type of Flight Plan Filed:	IFR
Destination:	Birmingham, AL (BHM)	Type of Clearance:	IFR
Departure Time:	09:20 Local	Type of Airspace:	

Airport Information

Airport:	Birmingham International BHM	Runway Surface Type:	Asphalt
Airport Elevation:	650 ft msl	Runway Surface Condition:	Dry
Runway Used:	06	IFR Approach:	ILS
Runway Length/Width:	11998 ft / 150 ft	VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	1 Minor	Aircraft Damage:	Substantial
Passenger Injuries:	1 Serious	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Serious, 1 Minor	Latitude, Longitude:	33.563888,-86.75222(est)

Administrative Information

Investigator In Charge (IIC):	Gretz, Robert
Additional Participating Persons:	Jack E Clark; FAA/FSDO; Birmingham, AL Brannon Mayer; Cirrus Aircraft; Deluth, MN Fred Barber; Avidyne Corp; Lincoln, MA
Original Publish Date:	April 25, 2013
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=85272

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