Aviation Investigation Final Report

Location:	Salina, Utah	**Accident Number:**	WPR12FA305
Date & Time:	July 14, 2012, 11:30 Local	**Registration:**	N86AA
Aircraft:	CIRRUS DESIGN CORP SR22	**Aircraft Damage:**	Substantial
Defining Event:	VFR encounter with IMC	**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The noninstrument-rated pilot departed on a visual flight rules (VFR) cross-county flight. Recorded radar data indicated that the airplane was in level flight at 13,300 feet mean sea level (msl) during about the last 30 minutes of the flight. The last 2 minutes of the radar data showed the airplane making a slow climbing turn to an altitude of 14,200 feet msl. The last radar returns showed the airplane making a sharper left turn at 13,500 feet msl before radar contact was lost. The accident site was located 1.5 nautical miles southeast of the last radar return at an elevation of 7,928 feet msl. Examination of the accident site revealed that the airplane collided with trees and mountainous terrain in a steep nose-down attitude. A postaccident examination of the airframe and engine revealed no evidence of preimpact mechanical malfunctions or failures that would have precluded normal operation.

It could not be determined if the pilot obtained a weather briefing for the flight. The most recent pilot report before the accident indicated cloud bases at 9,000 feet in the accident area. Weather returns depicted light-intensity echoes over the route of flight consistent with reduced visibility in light rain and extensive vertically developed clouds. Therefore, although weather conditions at the departure and destination airports were VFR, available weather information indicates that the accident airplane likely encountered instrument meteorological and mountain obscuration conditions en route. Given the weather conditions in the area and the altitude and course changes made in the few minutes before the accident, it is likely that the pilot became spatially disorientated and subsequently lost airplane control.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The noninstrument-rated pilot's continued visual flight into instrument meteorological conditions, which resulted in spatial disorientation and a subsequent loss of airplane control.

Findings

Personnel issues	Decision making/judgment - Pilot
Personnel issues	Flight planning/navigation - Pilot
Personnel issues	Aircraft control - Pilot
Personnel issues	Spatial disorientation - Pilot
Environmental issues	Mountainous/hilly terrain - Contributed to outcome
Environmental issues	Below VFR minima - Effect on operation

Factual Information

History of Flight

Enroute-cruise	VFR encounter with IMC (Defining event)
Enroute-cruise	Loss of control in flight
Uncontrolled descent	Collision with terr/obj (non-CFIT)

HISTORY OF FLIGHT

On July 14, 2012, about 1130 mountain daylight time (MDT), a Cirrus SR22, N86AA, impacted terrain near Salina, Utah. Springhill Aviation LLC., was operating the airplane under the provisions of 14 Code of Federal Regulations (CFR) Part 91. The private pilot and one passenger were fatally injured; the airplane was substantially damaged by impact forces. The local cross-country personal flight departed Concord, California, with a planned destination of Aspen, Colorado. Visual and instrument meteorological conditions prevailed along the route of flight, and a visual flight rules (VFR) flight plan had been filed.

The airplane was the subject of an alert notice (ALNOT) following the loss of radar contact. Local law enforcement and the Civil Air Patrol initiated a search for the airplane. The wreckage was located by personnel from the Sevier County Sheriff's department flying in a civilian provided helicopter at about 1800 MDT, on July 15, 2012.

Radar data obtained for the flight from the Federal Aviation Administration (FAA) was reviewed by the National Transportation Safety Board (NTSB) investigator-in-charge (IIC). The radar track identified the airplane traversing from west to east at a Mode C altitude of 13,700 feet mean sea level (msl). During the last 2 minutes of radar data, the radar target indicated a slow climbing turn to an altitude of 14,200 feet msl. The last radar return was at 11:28:54 MDT, that indicated a sharper left turn at a reported altitude of 13,500 feet msl before radar contact was lost. The accident site was located 1.5 nautical miles (nm) southeast of the last radar return. The field elevation at the accident site was 7,928 feet msl. An Air Traffic Control Study was completed by an air traffic investigator and is attached to the public docket.

PERSONNEL INFORMATION

The 59-year-old pilot held a private pilot certificate with a single engine land rating. He held a third-class medical certificate dated April 25, 2012, with the limitation: must have available glasses for near vision. The medical certificate stated the pilot was 73 inches tall and weighed 245 pounds.

According to the Cirrus corporate flight operations department, the pilot had not received any transition training from Cirrus.

The pilot's logbook was recovered from the accident site. The logbook covered entries from December 28, 2003, through June 26, 2012.

According to the logbook entries, the pilot began his initial flight training in the end of December 2003. The bulk of his private pilot training was conducted in a Cessna 172 with a few lessons in a Cirrus model SR20.

A February 14, 2005, logbook entry showed an instructional flight from Klamath Falls, Oregon, to Redding, California, and the remarks block states "picked up SR22." The registration annotated was for N86AA, the accident airplane. No further flights were listed for N86AA until July 2005, which was after the pilot took his private pilot practical written test.

On June 20, 2005, the pilot took and passed his private pilot practical flight exam in a Cessna 172 with about 211 flight hours logged. After the private pilot's test, two flights are logged in a Cessna 172. Mid July 2005, the pilot started to receive instruction in the accident airplane.

The logbook indicates the pilot had biennial flight reviews in 2007, 2009, 2010, and 2011.

Cirrus Owners Pilot Association (COPA) records show that the pilot attended a COPA Cirrus Pilot Proficiency Program (CPPP) event in Concord, California, in October 2008, as a "ground participant." The pilot's logbook indicates he also attended a COPA CPPP in October 2012, where he did log flight time.

According to the pilot's logbook entries he had accumulated a total flight time of 600 hours, with 484 hours in the accident make and model. The pilot had flown 7.5 hours in the last 90 days, 1.3 in the last 30 days, and zero hours in the last 24 hours.

AIRCRAFT INFORMATION

Cirrus SR22 serial number 1131, registration number, N86AA, received its standard airworthiness certificate on October 19, 2004. The airplane was equipped with: an S-TEC 55X autopilot, TKS anti-icing system, Avidyne Primary Flight Display (PFD) & Multi-Function Display (MFD), dual Garmin GNS430s, engine monitoring, Sky Watch, and XM weather.

According to documents on file, the airplane was purchased new in October 2004, by the pilot directly from Cirrus.

Airframe total time was undetermined.

No airplane records were located at the accident site, and the pilot's family was unable to locate any maintenance records for the airplane.

According to records obtained from Sterling Aviation in Concord, a 100-hr/annual inspection had been completed, and the airplane returned to service on October 27, 2011, with an airframe total time of 588.7 hours.

METEOROLOGICAL INFORMATION

A staff meteorologist for the NTSB prepared a weather study, which included the following weather for the departure area, route of flight, and destination.

A review of the Mesowest data for remote weather observation equipment indicated several sites within 30 miles of the accident site. Joe's Valley situated at 8,700 feet was the closest weather reporting station. It was located 28 miles north of the accident site, and under similar conditions based on the satellite image reported a temperature of 53 degrees Fahrenheit, dew point of 51 degrees Fahrenheit, a relative humidity of 94%, and indicated reduced visibility and/or a ceiling less than 1,000 feet supporting mountain obscuration conditions. The wind was from the south-southwest at 5 knots.

In-Flight Weather Advisories – The national Weather Service (NWS) had the following advisories current over the region: A Convective Significant Meteorological Information (SIGMET) 54W for an area of embedded thunderstorms in the area immediately south of the accident site moving north at 20 knots with tops to 43,000 feet, and an Airmen's Meteorological Information (AIRMET) for mountain obscuration.

Summary - The observations from Price, Utah (KPUC), indicated multiple layers of clouds and rain showers with VFR conditions, while conditions at Bryce Canyon (KBCE) south of the accident site and at almost the same elevation of Price, reported LIFR conditions due to rain, fog/mist, with ceilings broken to overcast between 200 and 400 feet agl at the time of the accident. Based on conditions at Bryce Canyon ceilings over the accident site may have been at 8,000 feet msl with visibility restricted in rain.

The RAWS site at Joes Valley at 8,700 feet msl did not have a visibility or ceilometer; however, the station reported a 94% relative humidity with a 1-degree temperature-dew point spread, which supported low ceilings and/or visibility in rain/mist. Other RAWS sites in the higher elevation reported similar conditions.

A pilot report at 1138 MDT (1738Z) from a Beechcraft BE35 at 7,500 feet reported 20 miles north of Cedar City, Utah, immediately west of the accident site that the mountains were obscured. Conditions at Bryce Canyon also reported similar conditions with the 200 to 400 feet ceilings. Another report from a Cessna CRJ flying over the Cedar City area reported cloud bases at 9,000 feet with icing conditions between 12,000 and 13,000 feet. Other aircraft reported isolated rain showers in all quadrants, with some producing moderate to heavy precipitation.

The radar and satellite imagery depicted convective clouds over the route and the accident site with tops to 27,500 feet, with conditions very similar to what was observed over Bryce Canyon. The radar imagery from Cedar City (KICX), 0.5-degree base reflectivity image was centered at 22,600 feet and depicted very light intensity echoes over the accident site and implied cumulus congestus clouds capable of producing rain showers and reduced visibility.

The NWS Aviation Weather Center's (AWC) Area Forecast expected scattered clouds at 12,000 feet msl and broken at 15,000 feet with tops to 28,000 feet. The forecast was amended by an AIRMET for mountain obscuration that extended over the route and the accident site.

The Terminal Area Forecast (TAF) for Bryce Canyon available to the pilot at the time of departure indicated a temporary period of Instrument Flight Rules (IFR) conditions in rain showers near the time of the accident. The TAF was amended at 1012 MDT (1612Z) to reflect actual conditions, which was

IFR with ceilings broken at 200 feet until 1100 MDT with thunderstorms in the vicinity afterwards. The TAF did not verify actual conditions during the period as IFR conditions prevailed during the entire period. The original forecasts implied VFR conditions would prevail, which did not verify based on observations.

COMMUNICATIONS

The airplane had been in contact with Salt Lake City, Air Route Traffic Control Center (ARTCC) Center on frequency 125.57.

The following transcript was from recorded communications between ATC (ZLC44) and N86AA.

1710:48-ZLC44

NOVEMBER EIGHT SIX ALPHA ALPHA, RADAR CONTACT LOST, SAY ALTITUDE

1710:52-N86AA

UH, THIRTEEN THOUSAND FIVE HUNDRED

1710:56-ZLC44

NOVEMBER SIX ALPHA ALPHA ROGER UHM, WE WON'T PICK YOU UP FOR A WHILE, RADAR SERVICE IS TERMINATED, SQUAWK V F R, FOR FURTHER FLIGHT FOLLOWING, AS YOU'RE APPROACHING THE UH, CANYON LANDS AREA, YOU CAN TRY DENVER CENTER ON UH, LET'S SEE, IT'LL BE UH, ONE THREE FOUR POINT FIVE AS YOU UH, GET CLOSE TO THE MOAB AREA

1711:19-N86AA

OKAY, ONE THREE, ONE THREE POINT FIVE, RIGHT NOW I'M OVER RICHFIELD, THANK YOU

1711:24-ZLC44

NOVEMBER SIX ALPHA ALPHA ROGER, SQUAWK V F R, RADAR SERVICES TERMINATED, THIRTY-FOUR POINT FIVE AROUND CANYON LAND

1711:29-N86AA

THIRTY-FOUR POINT FIVE, THANK YOU

No further communications with the accident airplane were obtained.

WRECKAGE AND IMPACT INFORMATION

The accident site was located on the northern slope of a ridgeline in the Fishlake National Forest. The debris field was roughly 100 feet wide by 425 feet long running parallel to the crest of the ridge from east to west. The energy path was 263 degrees magnetic.

The first point of impact was a pine tree, which had its trunk broken at approximately 17 feet up. A ground scar was noted 30 feet beyond the broken pine tree, and was approximately 3-to-4 feet wide and 15 feet in length, ending at the crater that contained the engine firewall, and portions of the center console structure; the crater was about 3 feet deep. For the purposes of this report, the crater location was referred to as the "main wreckage, and was located at north 38 degrees, 49.181 minutes latitude and west 111 degrees, 25.948 minutes longitude, at an elevation of 7,928 feet msl.

In the immediate vicinity of the crater were several trees, whose mud spattered trunks faced opposite of the energy path of the accident airplane.

The engine came to rest oriented along a 200-degree magnetic heading. A propeller blade that had separated from the propeller hub, protruded from the crater just prior to the engine. Another propeller blade protruded from the dirt just forward of the engine oriented in the direction of the energy path. When moved by hand the blade felt as though it were still anchored to the propeller hub under the surface of the dirt. Recovery personnel later confirmed the propeller blade remained connected to the propeller hub assembly.

The airplane had fragmented during the accident sequence, with wing skin fragments located 70 feet away from the main wreckage nestled in the trees' limbs. The entire airplane was accounted for, and all damage was attributed to accident forces. The accident field report for this accident is attached to the public docket.

The PFD was present in the debris field. The screen was missing and the case was deformed with portions of the case missing. The internal circuit boards for the PFD were fragmented and separated from the PFD case. The PFD circuit cards were recovered for further examination.

The MFD memory module (compact flash card) was co-located in the debris field with the PFD.

MEDICAL AND PATHOLOGICAL INFORMATION

The Sevier County Coroner completed an autopsy on July 18, 2012. The FAA Civil Aerospace Medical Institute (CAMI), Oklahoma City, Oklahoma, performed toxicological testing of specimens of the pilot.

The cause of death was blunt force injuries as a result of an airplane accident.

Review of all FAA medical certificates and supporting documentation indicated that the pilot reported no significant past medical history and the Airman Medical Examiner (AME) identified no significant issues on physical examination.

Toxicological analysis could not be conducted due to tissue putrefaction. As a result, no determination could be made as to whether tested-for-drugs or ethanol had posed a hazard to flight safety.

Based on available history and physical examinations; the pilot has no known medical issues that would pose a hazard to flight safety.

TESTS AND RESEARCH

On August 14, 2012, the recovered airplane and engine were examined at Air Transport Inc., Phoenix, Arizona, by the investigation team and the reports are included in the accident docket.

The airframe and engine were examined with no mechanical anomalies identified that would have precluded normal operations.

The PFD and MFD were shipped to the NTSB Vehicle Recorders Laboratory for further examination. The Vehicle Recorders specialists reported that circuit cards were the correct cards but the chips containing data were not present on the boards. No data was recovered from any of the recovered components.

Pilot Information

Certificate:	Private	**Age:**	59
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	April 25, 2012
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	600.5 hours (Total, all aircraft), 483.7 hours (Total, this make and model), 483.7 hours (Pilot In Command, all aircraft), 7.5 hours (Last 90 days, all aircraft), 1.2 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	CIRRUS DESIGN CORP	**Registration:**	N86AA
Model/Series:	SR22	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	1131
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	October 27, 2011 Annual	**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	589 Hrs as of last inspection	**Engine Manufacturer:**	CONT MOTOR
ELT:	Installed, not activated	**Engine Model/Series:**	IO-550 SERIES
Registered Owner:	On file	**Rated Power:**	300 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	PUC,7590 ft msl	**Distance from Accident Site:**	56 Nautical Miles
Observation Time:	05:53 Local	**Direction from Accident Site:**	45°
Lowest Cloud Condition:	Few / 3900 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	Broken / 7500 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	30°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.18 inches Hg	**Temperature/Dew Point:**	18°C / 14°C
Precipitation and Obscuration:	N/A - None - Unknown precipitation		
Departure Point:	Concord, CA (CCR)	**Type of Flight Plan Filed:**	None
Destination:	Aspen, CO (ASE)	**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	38.819721,-111.43222

Administrative Information

Investigator In Charge (IIC):	Jones, Patrick
Additional Participating Persons:	Eric McCray; Federal Aviation Administration; Salt Lake City, UT Bradley Miller; Cirrus Aircraft; Duluth, MN Chris Lang; Continental Motors Inc.; Mobile, AL
Original Publish Date:	October 30, 2014
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=84325