Aviation Investigation Final Report

Location:	Gunnison, Colorado	**Incident Number:**	CEN14IA139
Date & Time:	February 14, 2014, 14:23 Local	**Registration:**	N18DN
Aircraft:	CIRRUS DESIGN CORP SR22	**Aircraft Damage:**	Minor
Defining Event:	Structural icing	**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

About 90 minutes before the flight, the pilot received a preflight weather briefing, which included an advisory for moderate icing between the freezing level (expected to be at or below 10,000 ft mean sea level [msl]) and 22,000 ft msl. The pilot reported that the airplane encountered instrument meteorological conditions with light icing accumulation about 45 minutes into the flight. The pilot advised an air traffic controller of the situation when the airplane was operating about 15,900 ft msl; however, before he had decided on an alternate route of flight, the icing conditions worsened, and the airplane was unable to maintain altitude. The controller noted that this was the first icing report in that vicinity although there had been earlier reports of light to moderate icing about 50 miles west of the airplane's position. Unsure of the height of the cloud bases in relation to the mountainous terrain below the airplane's flightpath, the pilot chose to deploy the parachute system. The airplane impacted a mountainside in about 10 ft of snow at an elevation of 11,000 ft msl. The pilot reported no preincident failures or malfunctions with the airplane that would have precluded normal operation. Available weather data at the time of the accident indicated that the freezing level was about 10,000 ft msl with clouds tops about 18,000 ft msl around the incident site.

Probable Cause and Findings

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

The pilot's improper decision to initiate the flight into an area with forecast icing conditions, which resulted in an encounter with in-flight icing conditions that prevented the airplane from being able to maintain altitude.

Findings

Personnel issues	Decision making/judgment - Pilot
Environmental issues	Conducive to structural icing - Effect on equipment

Factual Information

History of Flight

Enroute-cruise	Structural icing (Defining event)
Enroute-cruise	Altitude deviation
Enroute-descent	Miscellaneous/other
Emergency descent	Off-field or emergency landing

On February 14, 2014, at 1423 mountain standard time, a Cirrus Design Corp. SR-22 airplane, N18DN, sustained minor damage when it impacted terrain following an intentional airframe parachute deployment near Gunnison, Colorado. The pilot reported that the airplane had encountered structural icing during cruise flight at 16,000 feet mean sea level (msl) that ultimately prevented the airplane from maintaining altitude. The pilot subsequently activated the Cirrus Airframe Parachute System (CAPS) and the airplane landed in mountainous terrain about 24 miles north-northeast of Gunnison, Colorado. The pilot was not injured. The airplane was registered to ZBA LLC and operated by the pilot under the provisions of 14 Code of Federal Regulations Part 91 as a personal flight. Instrument meteorological conditions prevailed for the flight, which was operated on an instrument flight rules (IFR) flight plan. The flight originated from the Centennial Airport (APA), Denver, Colorado at 1345. The intended destination was the Colorado City Municipal Airport (AZC), Colorado City, Arizona.

The pilot reported that he had departed under clear sky conditions with no precipitation or icing forecast. About 45 minutes into the flight, he encountered instrument meteorological conditions with light icing accumulation. He advised the air traffic controller of the situation; however, before he had decided on an alternate route of flight, the icing conditions worsened. The pilot stated that the airplane was unable to maintain altitude. Unsure of the height of the cloud bases in relation to the mountainous terrain below his flight path, he elected to deploy the CAPS. The airplane ultimately landed on a mountain side in about 10 feet of snow at an elevation of approximately 11,000 feet.

Radar track data depicted the airplane on a west-southwest course at 15,900 feet msl until 1423:49 (hhmm:ss). The final radar data point was recorded at 1423:51, with an associated altitude of 15,400 feet msl. A review of air traffic control communications revealed that the pilot initially informed the controller of light icing conditions at 1421:07. The controller noted that this was the first icing report in that vicinity; although there had been earlier reports of light to moderate icing about 50 miles west of the airplane's position. The pilot declared an emergency at 1423:52, and 13 seconds later he advised that he had "pulled the parachute." He subsequently informed the controller that he had "lost control." No further communications were received from the pilot.

The pilot reported that there were no failures or malfunctions associated with the airplane prior to the incident. A postaccident examination revealed minor damage to the landing gear, engine cowling, and right wingtip. Effects on the airframe due to CAPS deployment alone consisted of minor damage.

The closest weather reporting facility was at the Aspen-Pitkin County Airport (ASE), located about 19 miles north of the incident site at an elevation of 7,838 feet. At 1453, the recorded weather conditions

included: wind from 360 degrees at 11 knots, visibility 10 miles, and overcast cloud ceiling at 5,000 feet above ground level (agl).

Conditions at the Gunnison-Crested Butte Regional Airport (GUC), located about 24 miles south of the incident site at an elevation of 7,680 feet, recorded at 1435, included: variable wind from 200 degrees to 260 degrees at 11 knots, gusting to 14 knots; broken cloud ceiling at 4,600 feet agl, with an overcast cloud layer at 5,000 feet agl.

Infrared satellite imagery depicted cloud temperatures in the vicinity of the incident site of -16 degrees Celsius, which corresponded to cloud tops at about 18,000 feet msl. Visible satellite imagery data depicted stratiform clouds obscuring the incident site. A review of individual images surrounding the incident time depicted little movement in the cloud cover over the region, which was consistent with altocumulus standing lenticular clouds associated with mountain wave activity. This corresponds with the wave information contained in the sounding data.

An upper air sounding from the National Weather Service site at Grand Junction (GJT), Colorado, located about 84 miles west of the incident site and taken at 1700, identified the freezing level to be about 9,720 feet mean sea level (msl). A predominant mountain wave was identified at 14,480 feet msl, which is consistent with enhanced icing potential in the atmospheric layer. Atmospheric modeling obtained from the National Oceanic and Atmospheric Administration (NOAA) Air Resources Laboratory (ARL) suggested the freezing level at 10,900 feet msl, with icing through 14,500 feet msl. The model wind and temperature profiles also expected mountain wave conditions, with stable atmosphere and strong wind at the ridge level.

Airman's Meteorological Information (AIRMET) advisories warning of IFR conditions, turbulence, and icing conditions were issued by the NWS at 1345. The incident site was included within the boundaries of each of the advisories. AIRMET Zulu, Update 7, valid until 2000, warned of moderate icing conditions from the freezing level to 22,000 feet msl.

Four pilot reports indicating light rime and mixed icing conditions in the vicinity of Aspen, Colorado, were received between 1330 and 1439. The associated altitudes ranged from 15,000 feet msl to 18,500 feet msl. One additional pilot report was received at 1507 (after the incident) indicating the presence of moderate rime icing at 12,000 feet about 15 miles west-southwest of ASE.

The pilot received a preflight weather briefing and filed a flight plan using the ForeFlight application about 1251. The weather briefing included AIRMET Zulu, Update 6, issued at 1235, warning of moderate icing between the freezing level and 22,000 feet. The freezing level was expected to be at or below 10,000 feet msl within the advisory area. The icing conditions were expected to continue through 2000. The briefing information did not include any pilot reports related to icing conditions.

Pilot Information

Certificate:	Private	**Age:**	41
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	4-point
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:**	February 1, 2011
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	December 11, 2013
Flight Time:	1262 hours (Total, all aircraft), 984 hours (Total, this make and model), 1210 hours (Pilot In Command, all aircraft), 31 hours (Last 90 days, all aircraft), 15 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	CIRRUS DESIGN CORP	**Registration:**	N18DN
Model/Series:	SR22	**Aircraft Category:**	Airplane
Year of Manufacture:	2001	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	0096
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	December 1, 2013 Annual	**Certified Max Gross Wt.:**	3600 lbs
Time Since Last Inspection:	48 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	2296 Hrs as of last inspection	**Engine Manufacturer:**	CONT MOTOR
ELT:	Installed, activated, aided in locating accident	**Engine Model/Series:**	IO-550-N
Registered Owner:	On file	**Rated Power:**	310 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:	GUC,7680 ft msl	**Distance from Accident Site:**	24 Nautical Miles
Observation Time:	14:35 Local	**Direction from Accident Site:**	200°
Lowest Cloud Condition:		**Visibility**	10 miles
Lowest Ceiling:	Broken / 4600 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	11 knots / 14 knots	**Turbulence Type Forecast/Actual:**	/ None
Wind Direction:	230°	**Turbulence Severity Forecast/Actual:**	/ N/A
Altimeter Setting:	30.14 inches Hg	**Temperature/Dew Point:**	6°C / -3°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Denver, CO (APA)	**Type of Flight Plan Filed:**	IFR
Destination:	Colorado City, AZ (AZC)	**Type of Clearance:**	IFR
Departure Time:	13:45 Local	**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Minor
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	38.912498,-106.766113

Administrative Information

Investigator In Charge (IIC):	Sorensen, Timothy
Additional Participating Persons:	Wayne K Jensen; FAA -- Denver Flight Standards; Denver, CO Brannon Mayer; Cirrus Design; Duluth, MN
Original Publish Date:	January 12, 2015
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=88798