



# Aviation Investigation Final Report

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<b>Location:</b>	N. Lauderdale, Florida	<b>Accident Number:</b>	MIA04LA070
<b>Date &amp; Time:</b>	April 10, 2004, 09:59 Local	<b>Registration:</b>	N916LJ
<b>Aircraft:</b>	Cirrus Design Corp. SR22	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>		<b>Injuries:</b>	1 None
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

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## Analysis

The pilot reported no discrepancies either during the preflight inspection or during the engine run-up before takeoff. He obtained his IFR clearance, and shortly after takeoff the flight encountered IMC at 400 feet MSL. While climbing, the vertical speed indicator suddenly decreased to 0, then increased to 2,000 FPM, then went back to 0. Moments later the altimeter began bouncing with very large deflections, then the attitude indicator did not agree with the turn coordinator. He did not activate the alternate static source as per the pilot's operating handbook, and advised the controller that he was "losing gauges" and he would be unable to execute an instrument landing system approach to the departure airport. He activated the cirrus airframe parachute system (CAPS), and the airplane descended into trees. The pilot indicated he had 105 hours actual instrument flight time. Following recovery, the pilot's attitude indicator (AI) and turn coordinator (TC) powered up normally when battery No. 2 was switched on. Approximately 1 teaspoon of water was found between the static port openings and the alternate static air valve in the static lines. Testing of the water sample revealed it contained 3.2 mg/L of fluoride, which is common in tap water. The airplane's static system was tested to 1,000 feet, and the flight instruments were found to operate erratic. The vertical speed indicator fluctuated between 500 and 2,000 feet per minute, the altimeter indicated 200 feet, the airspeed indicated 60 knots (KTS), and the instruments did not return to zero when the pressure was returned to sea-level. When pressurizing the pitot line to 100 KTS the airspeed was found to be "sticky" and was "leaking" approximately 5 KTS per minute. Testing of the pitot static system from the alternate air source revealed no discrepancies. Bench testing of the attitude indicator and turn coordinator, revealed no discrepancies. Damage to the master control unit (MCU) occurred while trying to jump start the engine post-accident. No pilot reports (PIREP's) indicated any significant turbulence over Florida at the time of the accident. The engine was run on the airplane for approximately 10-15 minutes with no discrepancies noticed.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The erratic operation of the pitot-static system associated flight instruments due to water contamination, and the pilot's failure to take the appropriate corrective actions.

### Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION

Phase of Operation: CLIMB

Findings

1. (F) PITOT/STATIC SYSTEM - CONTAMINATION, WATER
2. (C) REMEDIAL ACTION - NOT FOLLOWED - PILOT IN COMMAND

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Occurrence #2: FORCED LANDING

Phase of Operation: EMERGENCY DESCENT/LANDING

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Occurrence #3: IN FLIGHT COLLISION WITH OBJECT

Phase of Operation: EMERGENCY DESCENT/LANDING

Findings

3. OBJECT - TREE(S)

## Factual Information

### HISTORY OF FLIGHT

On April 10, 2004, about 0959 eastern daylight time, a Cirrus Design Corporation SR22, N916LJ, registered to Cellventures of NY, Inc., collided with trees during descent after the pilot intentionally activated the Cirrus Airframe Parachute System, near North Lauderdale, Florida. Instrument meteorological conditions (IMC) prevailed at the time and an instrument flight rules (IFR) flight plan was filed for the 14 CFR Part 91 personal flight from the Fort Lauderdale Executive Airport, Fort Lauderdale, Florida, to Palm Beach International Airport, West Palm Beach, Florida. The airplane was substantially damaged and the private-rated pilot, the sole occupant, was not injured. The flight originated about 5 minutes earlier from the Fort Lauderdale Executive Airport.

The pilot reported no discrepancies either during the preflight inspection or during the engine run-up before takeoff. He obtained his IFR clearance, and shortly after takeoff the flight encountered IMC at 400 feet mean sea level (MSL). While communicating with the Miami Air Route Traffic Control Center and climbing at 800 feet-per-minute (FPM), the vertical speed indicator (VSI) suddenly decreased to 0, then increased to 2,000 FPM, then went back to 0. He also reported there was no turbulence encountered during this time. He advised air traffic control (ATC) that the flight needed to return, and was vectored heading 270 degrees, and cleared to climb to 2,000 feet. At that point, the altimeter began bouncing with very large deflections, then the attitude indicator did not agree with the turn coordinator. He did not activate the alternate static source, and advised the controller that he was "losing gauges" and he would be unable to execute an instrument landing system approach to the departure airport. He then advised the controller that he was going to activate the CAPS. He noted that following deployment of the CAPS, the emergency locator transmitter activated, and his door separated. The airplane descended reasonably flat into trees, with most of the damage to the airplane occurring because of the tree contact and not the ground contact. He further reported he did not feel the point of ground contact.

### PERSONNEL INFORMATION

The pilot-in-command (pilot) was the holder of a private pilot certificate with airplane single engine-land and instrument airplane ratings last issued on August 15, 2001. He was issued a third class medical certificate on March 13, 2001, with the restriction to wear corrective lenses for near and distant vision. He indicated on the NTSB Pilot/Operator Aircraft Accident Report form a total flight time of 799.4 hours, of which 711.3 hours were as pilot-in-command, and 540.5 hours in the accident make and model. He logged 26.2 hours in the last 90 days, and 5.2 hours in the last 30 days, in the accident make and model.

## AIRCRAFT INFORMATION

The airplane was manufactured in 2001, by Cirrus Design Corporation, as model SR22, and was designated serial number 0080. The airplane was certificated in the normal category, and was equipped with a Continental IO-550-N engine, a Hartzell constant speed PHCJ3YF-1RF propeller, and a Cirrus Airframe Parachute System (CAPS). The pilot's attitude indicator (AI) and turn coordinator (TC) are powered by alternator 2 and battery 2. The static system of the aircraft consists of dual static ports mounted in the fuselage with connected lines to the cockpit instruments. An alternate static pressure source valve provides backup static pressure should the primary static source become blocked. Water traps with drains, under the floor in the cabin, are installed at each pitot and static line low point to collect any moisture that enters the system. The traps, which are for maintenance only, should be drained at the annual inspection and when water is known or suspected.

The airplane was last inspected in accordance with an annual inspection on August 1, 2003, and no static system check was performed at that time. The last static system check was performed on August 10, 2001. Federal Aviation Regulation 91.411 states that no person may operate an airplane, or helicopter, in controlled airspace under the IFR unless each static pressure system, each altimeter instrument, and each automatic pressure altitude reporting system has been tested and inspected within the preceding 24 months.

## METEOROLOGICAL INFORMATION

A METAR weather observation taken at the Fort Lauderdale Executive Airport on the day of the accident at 0953, (approximately 3 minutes before the accident), indicates that the wind was from 270 degrees at 4 knots, overcast clouds existed at 600 feet msl, the temperature and dew point were 22 and 24 degrees Celsius, respectively, and the altimeter setting was 29.94 inHg.

The NTSB meteorological factual report revealed that no pilot reports (PIREP's) indicated significant turbulence over Florida at the time of the accident. The surface and upper air winds were light, and no significant directional wind shear or convective buildups were indicated.

## COMMUNICATIONS

The pilot was last in contact with Miami Air Route Traffic Control Center, Florida, and there were no reported communication difficulties before the CAPS was deployed.

## WRECKAGE AND IMPACT INFORMATION

The NTSB did not examine the accident site, nor the airplane following recovery. The airplane came to rest upright in a wooded area approximately 3.5 nautical miles and 288 degrees from Fort Lauderdale Executive Airport.

Examination of the airplane at the accident site and following recovery was performed by

representatives of the airplane and engine manufacturer with Federal Aviation Administration (FAA) oversight. Following recovery, the pilot's AI and TC powered up normally when battery No. 2 was switched on. A static system leak check using the left static port was performed and when tested to 1,000 feet, the flight instruments were found to operate erratic. The vertical speed indicator fluctuated between 500 and 2,000 feet per minute, the altimeter indicated 200 feet, the airspeed indicated 60 knots, and the instruments did not return to zero when the pressure was returned to sea-level. The same results were observed when testing the right static port. When pressurizing the pitot line to 100 knots, the airspeed was found to be "sticky" and was "leaking" approximately 5 KTS per minute. Testing of the pitot static system from the alternate air source revealed no discrepancies with the instruments. Examination of the static system of the airplane revealed approximately 1 teaspoon of water was found between the static port openings and the alternate static air valve; the water was retained for analysis.

While attempting to jump-start the engine, damage to a circuit of the Master Control Unit (MCU) occurred. The engine was run on the airplane for approximately 10-15 minutes with FAA oversight; no discrepancies were found.

## TESTS AND RESEARCH

The airplane was washed on April 9, 2004. Prior to the wash the pitot tube and two static ports were reportedly covered with yellow vinyl tape (Patco's #150-P 2).

Testing of the water sample retained from the static system of the airplane, revealed it contained 3.2 mg/L of fluoride, which is common in tap water.

Testing of the MCU was performed at the manufacturer's facility with FAA oversight, which revealed that the clock power and battery No. 2 was operative, while No. 1 battery was inoperative. A jumper lead bypassed the previously mentioned damaged circuit of the MCU, which made it possible to proceed with the functional test. One abnormality was noted during the test, the "Dial 2" showed 0 amps. The Alt 1 switch was cycled and the gauge indicated correctly at 15 amps charging. This condition was never noticed again throughout the test. Further examination of the MCU revealed one of the copper wire traces that provides ground for battery No. 1 contactor was in an 'open' condition. Testing to duplicate the electrical trace damage was performed by shorting the left 3/16 inch diameter stud to a diode, adjacent to the stud. The electrical trace melted and was damaged similar to the accident MCU. No other discrepancies were found.

As previously reported, the pilot stated he did not use the alternate static air source. A review of the Pilot's Operating Handbook (POH) pertaining to pitot static malfunction revealed that if erroneous instrument readings of the static source instruments (airspeed, altimeter, and vertical speed) are known or suspected, the alternate static source valve should be opened to supply static pressure from the cabin to these instruments.

As previously reported, the pilot indicated that the AI and TC did not agree with each other

during the time of erratic reading of the pitot static flight instruments. Bench testing of the AI and TC with FAA oversight revealed no evidence of failure or malfunction of either instrument.

**ADDITIONAL INFORMATION**

The airplane minus the retained MCU was released to Mark C. Thompson, insurance adjuster for USAIG, on May 4, 2004. The retained MCU was also released to Mark C. Thompson, on May 4, 2005.

**Pilot Information**

<b>Certificate:</b>	Private	<b>Age:</b>	41, Male
<b>Airplane Rating(s):</b>	Single-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 3 Valid Medical-w/ waivers/lim	<b>Last FAA Medical Exam:</b>	March 13, 2001
<b>Occupational Pilot:</b>	UNK	<b>Last Flight Review or Equivalent:</b>	August 15, 2003
<b>Flight Time:</b>	799 hours (Total, all aircraft), 541 hours (Total, this make and model), 711 hours (Pilot In Command, all aircraft), 26 hours (Last 90 days, all aircraft), 5 hours (Last 30 days, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Cirrus Design Corp.	<b>Registration:</b>	N916LJ
<b>Model/Series:</b>	SR22	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	0080
<b>Landing Gear Type:</b>	Tricycle	<b>Seats:</b>	4
<b>Date/Type of Last Inspection:</b>	August 1, 2003 Annual	<b>Certified Max Gross Wt.:</b>	3400 lbs
<b>Time Since Last Inspection:</b>	70.3 Hrs	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	516.8 Hrs at time of accident	<b>Engine Manufacturer:</b>	Continental
<b>ELT:</b>	Installed, activated, did not aid in locating accident	<b>Engine Model/Series:</b>	IO-550-N
<b>Registered Owner:</b>	Cellventures of NY, Inc.	<b>Rated Power:</b>	310 Horsepower
<b>Operator:</b>	Jeffrey M. Ippoliti	<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Instrument (IMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	KFXE, 14 ft msl	<b>Distance from Accident Site:</b>	
<b>Observation Time:</b>	09:53 Local	<b>Direction from Accident Site:</b>	
<b>Lowest Cloud Condition:</b>		<b>Visibility</b>	2.5 miles
<b>Lowest Ceiling:</b>	Overcast / 600 ft AGL	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	4 knots / None	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	270°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	29.9 inches Hg	<b>Temperature/Dew Point:</b>	24°C / 22°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Fort Lauderdale, FL (KFXE)	<b>Type of Flight Plan Filed:</b>	IFR
<b>Destination:</b>	West Palm Beach, FL (KPBI)	<b>Type of Clearance:</b>	IFR
<b>Departure Time:</b>	09:54 Local	<b>Type of Airspace:</b>	Class D

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>		<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 None	<b>Latitude, Longitude:</b>	26.209722,-80.233886



## Administrative Information

<b>Investigator In Charge (IIC):</b>	Monville, Timothy
<b>Additional Participating Persons:</b>	James Ramnanan; FAA Flight Standards District Office; Fort Lauderdale, FL Robert M Busch; Cirrus Design Corporation; Duluth, MN John T Kent; Teledyne Continental Motors; Mobile, AL
<b>Original Publish Date:</b>	September 13, 2005
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class</a>
<b>Note:</b>	
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=59099">https://data.nts.gov/Docket?ProjectID=59099</a>

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