



AVIATION



HIGHWAY



MARINE



RAILROAD



PIPELINE

# Aviation Investigation Final Report

<b>Location:</b>	Meadview, Arizona	<b>Accident Number:</b>	LAX07FA021
<b>Date &amp; Time:</b>	October 25, 2006, 12:08 Local	<b>Registration:</b>	N121LD
<b>Aircraft:</b>	Cirrus SR22	<b>Aircraft Damage:</b>	Destroyed
<b>Defining Event:</b>		<b>Injuries:</b>	4 Fatal
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

## Analysis

The pilot contacted a flight service station (FSS) specialist to file an instrument flight plan. He stated that he had onboard weather and did not need a weather briefing; however, the FSS specialist did not provide information about adverse weather conditions along the route of flight, as required by FAA directives. The pilot then departed on the cross-country flight. While en route to his destination, the pilot told the air traffic controller that he needed to deviate around weather. The air traffic controller was aware of thunderstorms along the pilot's route of flight, as well as an icing report north of his position. The air traffic controller did not advise the pilot of the known weather information, as required by FAA directives. The pilot continued and then stated that they had an emergency due to icing conditions. Meteorological conditions at the time of the accident showed that the pilot encountered rime/mixed icing of at least moderate intensity, in convection. Thunderstorms were in the area and turbulence was also possible. The airplane then stalled and entered a spin. There was no evidence that the pilot attempted to activate the Cirrus Airframe Parachute System (CAPS), although activation of the system is the only approved recovery of the airplane after its entry into a spin. Weather information transmitted to the airplane's onboard weather system contained weather forecasts of icing, turbulence, and thunderstorms. Whether or not the pilot reviewed this information could not be determined. Testing showed that a fluid line of the anti-icing system could disconnect at higher pressure; however, under normal system pressure the line stayed secured. No other mechanical anomalies were identified during the examinations.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's inadequate weather evaluation and continued flight into forecasted icing conditions. Contributing to the severity of the accident was the pilot's failure to follow proper

operating procedures and deploy the CAPS when the airplane entered a spin. The flight service specialist's failure to follow published procedures to provide adverse weather or forecast potential hazardous conditions along the intended route of flight, as well as the air traffic controller's failure to provide the pilot with radar-displayed weather information were factors.

## Findings

Occurrence #1: IN FLIGHT ENCOUNTER WITH WEATHER

Phase of Operation: CRUISE

### Findings

1. (F) WEATHER CONDITION - ICING CONDITIONS
2. (F) FSS SERVICE - INFORMATION INSUFFICIENT - ATC PERSONNEL(FSS)
3. WEATHER CONDITION - TURBULENCE
4. (F) COMMUNICATIONS/INFORMATION/ATC - INFORMATION INSUFFICIENT - ATC PERSONNEL(ARTCC)
5. (C) WEATHER EVALUATION - INADEQUATE - PILOT IN COMMAND
6. (C) FLIGHT INTO ADVERSE WEATHER - CONTINUED - PILOT IN COMMAND

-----

Occurrence #2: LOSS OF CONTROL - IN FLIGHT

Phase of Operation: CRUISE

### Findings

7. STALL/SPIN - INADVERTENT - PILOT IN COMMAND
8. (F) PROCEDURES/DIRECTIVES - NOT FOLLOWED - PILOT IN COMMAND

-----

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: DESCENT - UNCONTROLLED

### Findings

9. TERRAIN CONDITION - GROUND

## Factual Information

"THIS CASE WAS AMENDED MARCH 5, 2008."

### HISTORY OF FLIGHT

On October 25, 2006, at 1208 mountain standard time (MST), a Cirrus SR22, N121LD, reported icing conditions at approximately 12,000 feet mean sea level (msl) and impacted terrain about 24 nautical miles (nm) northeast of Meadview, Arizona. The pilot was operating the airplane under the provisions of 14 Code of Federal Regulations Part 91. The instrument rated private pilot and three passengers sustained fatal injuries; the airplane was destroyed. A combination of visual and meteorological conditions prevailed along the route of flight and a pop-up instrument flight rules (IFR) flight clearance was issued at 1150. The pilot departed from Lake Tahoe Airport (TVL), South Lake Tahoe, California, about 1030 Pacific daylight time, and was destined for the Grand Canyon National Park Airport (GCN), Grand Canyon, Arizona.

According to family friend, the pilot met his wife and two children in the San Francisco, California area on October 23. They flew to South Lake Tahoe, spent the night, and then planned to depart for the Grand Canyon to go hiking. The morning of the accident, the pilot was delayed due to an overnight frost accumulation on the airplane. About 1015, the pilot told the family friend that they were going to the Grand Canyon and would call when they arrived. Following the trip to the Grand Canyon, they had plans to travel to Phoenix, Arizona.

Review of flight service station (FSS) data showed that the pilot contacted flight service to file an instrument flight plan. At the conclusion of filing the flight plan, the specialist asked if the pilot needed any additional services. The pilot stated that, "It's beautiful weather so I got weather on board, and we're set." There was no record of the pilot obtaining a weather briefing from FSS or via direct user access terminal (DUAT) service for the accident flight.

A fixed base operator employee at Lake Tahoe Airport stated that the pilot arrived at the airport the day prior from Reno, Nevada. The airplane was secured at the ramp and no fueling services were provided. The pilot returned to the airport the following morning and found frost on the airplane. He and his family waited while the sun rose and melted the frost accumulation. They departed about 1030. The employee indicated that the weather conditions at the Lake Tahoe Airport were "very good" with clear skies.

### PERSONNEL INFORMATION

The pilot held a private pilot certificate with an instrument rating. The pilot's last medical was issued on July 2, 2005, and was a third class. It had no limitations or waivers.

The pilot attended the Cirrus transition course at the Cirrus factory from November 15- 21, 2005. The pilot accrued 20.4 dual hours, 6.0 oral instruction hours, 1.5 dual day hours, 8.4 instrument hours, 34 landings, and 8.7 pre/post flight briefing hours.

The pilot's personal flight logbook was recovered from the accident site. The entries in the logbook were dated from July 1996 to October 2006. Excluding the last four entries that were for future planned flights, the pilot's total logged time was about 892 hours. The pilot obtained an instrument rating in July of 2005 which equated to his most recent flight review as outlined in FAR 61.56 (d). The pilot had accrued about 384 hours in the accident airplane. In the pilot's logbook, he logged almost all flights in the accident airplane under "actual instrument conditions." An accurate estimate of his actual instrument flight time could not be determined.

From April 25 to 29, 2006, the pilot logged a trip from Atlanta, Georgia, round trip via Gulfport and Tunica, Mississippi. In the remarks section he noted that thunderstorms were encountered.

## AIRPLANE INFORMATION

The airplane was a Cirrus SR22 manufactured in 2005. The pilot purchased the airplane from the factory in November 2005. A Teledyne Continental Motors (TCM) IO-550-N equipped with a Harzell PHC-J3YF-1RF powered the airplane. The pilot had previously owned a Cessna 172M, which his logbook indicated was purchased in June 2004. Federal Aviation Administration records showed that the pilot sold the Cessna 172M on April 15, 2005.

The airplane's production flight testing was completed on October 30, 2005, and its airworthiness certificate was issued on November 7, 2005. The first annual inspection was due no later than November 30, 2006. The last maintenance performed on the airplane was on October 12, 2006, at a total time of 406.2 hours.

The airplane was last refueled at a fixed base operator at the Reno/Tahoe International Airport on October 23. The fueling invoice indicated that the right and left fuel tanks were filled with the addition of 24.1 total gallons of fuel. On the invoice, the pilot's estimated departure time from the airport was noted as 1000 on October 24.

## METEOROLOGICAL INFORMATION

### Meteorological Factual Report

A Safety Board meteorologist reviewed weather data surrounding the time and location of the accident. The area forecast issued on October 25, at 0345 MST and valid until 1645 MST reported that the northern half of Arizona was forecast to have cloud layers from 7,000 to 8,000 feet broken, and 11,000 feet broken, with cloud tops at 14,000 feet. After 1300, winds were forecast to be westerly at 17 knots gusting to 27 knots.

The local weather included AIRMETS (Airman's Meteorological Information) for icing, approximately 65 nautical miles northeast of the accident site, and moderate turbulence (within the accident site area).

A convective SIGMET (Significant Meteorological Information) was issued for an area encompassing the accident site. Area thunderstorms were moving from 290 degrees at 20 knots with cloud tops to 28,000 feet mean sea level (msl). A convective SIGMET implies severe or greater turbulence, severe icing, and low-level wind shear.

#### XM Satellite Weather

The airplane was equipped with an XM Satellite Weather System. According to the supplement in the pilot's operating handbook, the XM Satellite Weather System enhances situational awareness by providing the pilot with real time, graphical weather information depicted on the MFD. The weather information is not an FAA-approved weather source.

The company that supplies weather information for the unit provided data showing that weather data, including the convective SIGMET, was available to the pilot. When the information is displayed to the pilot, it is shown on a specific page of the multi-function display (MFD). Although the unit has non-volatile memory, the page(s) of data that the pilot was viewing during the flight is not a recorded parameter.

Comparison of the weather radar data available to the pilot using the airplane's onboard weather display, with recorded weather radar information obtained following the accident, showed that the images available on the pilot's weather display did not compare exactly with radar images obtained by the Safety Board meteorologist. According to the weather provider, both the recorded radar and pilot's radar display showed similar locations of precipitation, but had the pilot's display lacked some of the lighter precipitation. The data that the pilot had displayed at the time of the accident is not a recorded parameter.

#### WRECKAGE AND IMPACT

The Safety Board investigator, a Safety Board specialist from the Office of Research and Engineering, and investigators from Cirrus, Ballistic Recovery Systems, AmSafe, and Teledyne Continental Motors, responded to the accident site on October 26, 2007. Two Federal Aviation Administration (FAA) inspectors from the Las Vegas Flight Standards District Office (FSDO) and one investigator from the FAA Aircraft Accident Investigation division also responded to the site.

The airplane impacted 20-degree sloped desert terrain at a terrain elevation of 4,520 feet mean sea level. All of the control surfaces were attached or partially attached to the structure. There was no fire.

The parachute was out of its enclosure, and the rocket and the deployment bag were located approximately 288 feet east of the main wreckage. Shards of Plexiglas were located near the fuselage. The activation cable was continuous from the activation handle aft through the fuselage to the rocket igniter.

## MEDICAL AND PATHOLOGICAL INFORMATION

The Mohave County Medical Examiner determined that the cause death for all occupants was multiple blunt force traumatic injuries due to an accident. The Federal Aviation Administration Bioaeronautical Research laboratory completed testing on specimens of the pilot. The results were negative for volatiles and all tested drugs.

## TESTS AND RESEARCH

The wreckage was recovered and brought to Air Transport, Inc., located in Phoenix, Arizona. Investigators convened there on October 28, 2006.

### Airframe

The airplane was destroyed upon impact. The wings remained attached through the center section, and the flaps and ailerons were secured. Measurement of the flap actuator was 3.5 inches, consistent with the flaps in the fully retracted position.

Control cables were traced from the empennage section forward to the master aileron actuator pulley attachment. The control rods extending out to the control yoke assemblies were fractured at the rod ends and bent in the deformed structure. The cables to the elevator bellcrank were continuous and the control rods to the control yoke assembly were fractured. The rudder aileron interconnect was connected. All parts and safeties were present. The mass balances for the flight controls were present and in their design locations. The roll trim and pitch trim actuators were in the approximate neutral positions.

The airplane was equipped with an XM weather/radio, a stormscope, Skywatch, EMax (engine monitoring system), CMax (electronic approach plates), flight director, TKS anti-icing system, and E-TAWS (enhanced terrain awareness system). The airplane was also equipped with dual Garmin 430 GPS units, a Garmin GTX 327 transponder, and an S-TEC 55X autopilot. The Hobbs hour meter showed 436.1 hours.

The TKS switches were on and in the max flow positions. The ice protection system was documented and sustained various breaks throughout the system in the fluid lines, including a fluid line that connected by design to the Horizontal Proportioning Unit. There was no evidence of fluid leakage on the surrounding airplane structures. Fluid was located at the pump and at the tee assembly for the wings and propeller. The TKS panels sustained impact damage. The ice protection system components were removed for further functional testing.

## Engine

The TCM engine was examined. The engine case was cracked in several places. The exhaust system, induction system, and oil sump were crushed against the engine. The magnetos were manually rotated and spark was obtained from each lead of the ignition harness. Both alternators sustained impact damage. The standby alternator separated upon impact and would not rotate by hand. The primary alternator, mounted to the front side of the engine, was removed by investigators; it was rotated freely by hand.

The fuel pump was removed and the drive was rotated by hand. The drive coupler was intact. The fuel manifold valve was disassembled and fuel was present in the screen area. The screen was clear of debris and the gasket was pliable.

The cylinder rocker covers were removed and residual oil was found on the valve train. The oil filter was removed and cut open. The filter was free of contaminants. Spark plugs were removed and examined. The coloration was light gray and according to the Teledyne Continental representative, they showed normal wear conditions. The spark plug type was Champion RHB-32S. The cylinders were borescoped and light gray deposits were identified in all of the cylinders.

## Propeller

The 3-bladed Hartzell propeller, model PHC-J3YF-1RF, was examined. The blades were numbered by investigators in a clockwise direction as viewed from the aft. The number 1 blade was undamaged and intact at the hub. The number 2 blade had multi-directional gouges and scratches on the cambered face of the blade. Leading edge damage was found from the tip to the hub and the blade was found loose in the hub. The front portion of the deice propeller boot had been torn off. The number 3 blade had multi-directional gouging and scratching on the cambered side with trailing edge and tip damage. The deice propeller boot was ripped along the leading edge. All of the slinger tubes at each of the propeller blades were intact. The lower half of the spinner sustained crush damage.

## Cirrus Airframe Parachute System (CAPS)

BRS manufactures the entire emergency parachute system, which Cirrus identifies as the Cirrus Airframe Parachute System (CAPS). All Cirrus airplanes are equipped with CAPS. CAPS utilizes a mechanically activated solid propellant rocket motor to extract the parachute from the airplane in emergency situations.

The activation handle used to fire the CAPS was present and located unstowed from the activation handle holder located at the roof of the airplane. The safety pin and its "remove before flight" tag were not in the activation handle and handle holder; it was located near the instrument panel (Cirrus preflight procedures require the removal of this safety pin from the activation handle prior to flight). The activation cable sheath was broken and stretched apart

near the activation handle holder assembly. Continuity of the activation cable was verified on scene.

The remainder of the CAPS was documented. According to the BRS representative, the condition of the CAPS was consistent with the parachute deploying upon the airplane's impact with the ground.

### Anti-Ice System

The airplane was equipped with a TKS ice protection anti-ice system. The system was certified as a non-hazardous system, indicating that the system is provided as a means of escape during inadvertent icing encounters. The system consists of six porous panels, a propeller slinger ring, four proportioning units, a metering pump, filter, strainer, fluid tank, activation switch, filler cap, system plumbing, and attaching hardware.

Components of the ice protection system were sent to CAV Aerospace, located in Consett, England, under the oversight of an accredited representative from the Air Accidents Investigation Branch (AAIB). Rig testing of the components showed that they were capable of operation pre-impact. One of fluid line fittings at the Horizontal Proportioning Unit showed an anomaly during testing. A system pressure was applied, and the fluid line was forced from the fitting at 70 pound per square inch (psi).

According to Cirrus, at minus 30 degrees, Celsius pressure at the horizontal proportioning unit would not exceed a range of 40 to 48 psi. Warmer temperatures would result in lower pressures. According to multi-function flight display data obtained from the accident airplane, the lowest outside air temperature for the accident flight was minus 11 degrees Celsius. If this fluid line became disconnected during operation of the system on the airplane, testing showed that the majority of the fluid would be lost and drain out at the fitting.

Remnants of a blue torque stripe remained on the line fitting to the Horizontal Proportioning Unit. According to the Cirrus representative, this system had been reworked on the flight line following its initial assembly (where it would have been given an orange torque stripe). Review of build records show that the right TKS panel on the horizontal stabilizer was repaired and a porous panel leak check performed. Company procedures require "production flight" personnel to utilize blue torque seal.

Review of Cirrus service history showed no similar reports of problems at the anti-icing system fittings. Additionally, the manufacturer indicated that based on CAV's findings, had the line been disconnected prior to the accident flight, the preflight checks on the system would have been unsatisfactory.

### Cockpit Displays Factual Report

The airplane was equipped with an Avidyne EXP5000 primary flight display (PFD) and an



Avidyne EX5000 multi-function flight display (MFD). The PFD samples and stores several data streams in a sequential fashion; when the recording limit of the PFD is reached, the oldest record is dropped and a new record is added. The MFD generates new data files for each power on cycle. New MFD data are sampled every 6 seconds, and recorded to memory once every minute. If an interruption of electrical power occurs during the minute between MFD memory write cycles, data sampled during that portion of a minute are not recorded. The last MFD recording on the accident flight occurred just under one minute prior to the loss of electrical power on the accident flight.

The Safety Board Vehicle Recorder Division reviewed the data obtained from the PFD and MFD. In summary, the last 13 minutes of the recording showed a climb from a pressure altitude of 10,900 feet at an average rate of 500 feet per minute, and the airspeed decreased from 147 knots. About 5 minutes later, the altitude leveled at 12,900 feet and the airspeed began increasing. Throughout the climb and 1 minute after the level off, multiple changes in roll were displayed, ranging from 45 degrees right to 35 degrees left. Approximately 1 minute after the level off, a 360-degree turn was begun, that included changes in pressure altitude between about 12,000 and 13,300 feet; indicated airspeed between approximately 160 and 62 knots; pitch attitude between approximately 30-degrees nose-up and 25-degrees nose down; and vertical speed between approximately 5,200 positive and 6,300 negative feet per minute.

During the last minute of flight, the indicated airspeed decreased to 68 knots and a left roll was indicated, with a rapidly changing magnetic heading. Over this time period, the indicated airspeed stabilized at an average of 118 knots and vertical speed stabilized at an average of negative 6,700 feet per minute. At the last recording, the pressure altitude was 5,074 feet and the vertical speed was negative 7,208 feet per minute.

Engine data parameters were also recorded. The data showed that during the majority of the flight, the engine was operating at approximately 2,500 rpm. About 1.5 minutes prior to the end of the recording, the engine rpm varied between 1,910 and 2,690 rpm. During the last 30 seconds of recorded data, the rpm averaged 2,500 rpm.

#### Air Traffic Control Factual Report

The Safety Board Air Traffic Control Group reviewed flight service station and air traffic control information pertinent to the accident flight.

About 1002 MST on the date of the accident, the pilot contacted the DeRidder, Louisiana Automated FSS to file an instrument flight rules (IFR) flight plan from Lake Tahoe Airport to Grand Canyon National Park Airport. About 1004, the FSS specialist completed filing the IFR flight plan for the pilot. However, according to the FSS specialist, he input the pilot's requested altitude in the wrong flight plan field, which made the proposed departure time for the following day. The pilot thanked the specialist for filing the flight plan and declined any further information. The FSS specialist did not provide any weather information to the pilot.

At 1021 MST, according to Oakland (ZOA) ARTCC voice communications, the pilot of N121LD made initial contact with the sector 44 (R44) controller at ZOA ARTCC when the flight was 15 miles southeast of Lake Tahoe Airport at 13,000 feet. The pilot requested to activate his IFR flight plan, adding that he had just filed the flight plan about 20 minutes earlier with flight service. The controller issued a discrete radar beacon code 3375, radar identified the aircraft, provided the Reno altimeter setting, and asked the pilot for the altitude of the flight. The pilot advised he was at 13,000 feet. The controller advised the pilot that he did not have a flight plan for the aircraft and asked for information necessary to input a flight plan. After providing the information, the pilot stated that he could go VFR. The controller advised the pilot to remain on the assigned beacon code for VFR flight following.

About 1028 MST, N121LD was handed off and communication switched to ZOA sector 46 (R46). The pilot acknowledged the frequency change.

About 1052 MST, after providing the Tonopah, CA altimeter, the R46 controller asked the pilot if he was familiar with the Nellis Air Force Base (LSV) restricted area complex. The pilot advised he was not familiar with the restricted area complex. The controller suggested to the pilot of N121LD a route of flight over Beatty (BTY) en route to his destination to keep the airplane clear of the military airspace.

At 1106 MST, the aircraft was handed off and communication switched to ZLA ARTCC sector 16 (R16). After the communication transfer with N121LD was completed, the ZOA R46 controller made a broadcast over the sector frequencies stating that Convective SIGMET 4 Western was valid for Arizona, Utah, and Nevada. About 1 minute later, the pilot of N121LD made initial contact with the ZLA sector 16 radar controller.

At 1122 MST, the R16 controller lost radar contact with the aircraft and told the pilot that he lost radar contact and that radar services were terminated. The controller provided the pilot with an approach control frequency and suggested that the pilot attempt to contact the Las Vegas Terminal Radar Approach Control (L30) in about 40 miles. The pilot continued to fly VFR to his destination.

At 1147:59 MST, the pilot of N121LD contacted the ZLA sector 7 (R7) controller and was told to "standby." During this time, the radar associate for the R7 controller (RA7) received a call from an L30 controller who asked if the radar controller was looking for the airplane. The approach controller advised that the pilot would be calling ZLA.

At 1149 MST, the Nellis Air Traffic Control Facility (NATCF) called RA7 to advise that they were tracking a 1200 beacon code that had flown through the Nellis Air Force Base (LSV) restricted airspace. The NATCF controller asked for help in tracking the aircraft to the Grand Canyon, which they believed to be the destination.

At 1150:52 MST, the R7 controller asked the pilot for his request. The pilot said, "...I have a lot of weather in front of me, clouds. I'm VFR approaching IFR. I'm trying to get to Grand Canyon

so I need to advise here because if I go, I mean, I can lower then just go around the mountains but I'd rather if we could somehow pick up an IFR clearance to Grand Canyon, it would be great." The R7 controller asked the pilot for his current location. The pilot said, "20, 20, 30 miles northeast of LAS."

At 1151:31 MST, the R7 controller issued the pilot transponder code 7342.

At 1152:20 MST, the controller radar identified the aircraft, and about one minute later provided an IFR clearance to the Grand Canyon airport stating, "You're cleared to Grand Canyon airport via present heading, expect radar vectors direct, climb and maintain one one thousand." The pilot acknowledged the clearance.

At 1153:51 MST, the controller asked the pilot for the type of aircraft. The pilot said, "It's a Cirrus, SR-22, slash G and I have weather on board. I may have to do a little bit of weather deviation, I have a cell in front of me around 20 miles just in front of us." The R7 controller confirmed the location of the weather cell and asked the pilot whether he wanted to go left or right around the cell. The pilot said, "Think I'm going to go to the right because it's (unintelligible) another cell to the right if I go to the left." The controller approved the pilot's request to deviate to the right. According to recorded data, the thunderstorm activity was 15 miles wide and in the accident aircraft's 11 o'clock thru 3 o'clock position moving southeast bound. The data indicated that there was more than one weather intensity being shown. Also, the R7 controller was aware of a pilot report (PIREP) that an aircraft had encountered moderate icing at 13,000 feet msl between Cedar City, Utah and MATZO intersection.

At 1154 MST, the RA7 advised LSV that they were talking to the subject aircraft, N121LD.

At 1155:06 MST, the controller advised the pilot of N121LD about an Airbus "at 10 o'clock, 10 miles, southwest bound descending through 14,000 for 12,000 [feet]." The pilot said, "... has traffic on the scanner and we are looking for the visual and we are going through the clouds. We won't be able to see it for awhile." The controller acknowledged.

At 1156:25 MST, the pilot requested a climb to 13,000 feet; however, the R7 controller was unable to approve the altitude change. The controller said, "I'll have higher as soon as that traffic is clear of you." The pilot acknowledged.

At 1157 MST, a controller from NATCF called RA7 and provided a contact phone number for NATCF, and asked the RA7 controller to instruct the pilot to call after landing for a possible pilot deviation report. The RA7 agreed to do so.

At 1159 MST, the R7 controller instructed the pilot to climb and maintain 13,000 feet. In addition, the pilot was informed about a possible pilot deviation and was provided a phone number to call after landing. The pilot advised the controller that he had a weather cell coming up in front of him and requested a 10-degree deviation to the right. The controller approved the deviation and said, "Direct to GCN when able." The pilot acknowledged.

At 1201:37 MST, the R7 specialist being relieved provided a relief briefing to the relieving R7 controller. Regarding N121LD she said, "...He is deviating right around this build up and going to go direct Grand Canyon when he can. [Sector] 8 has radar and he has a number to call when he's on the ground. Yeah, keep him present heading for this guy so watch your Bryce Canyons...."

At 1207:10 MST, according to recorded radar data, a minimum safe altitude warning (MSAW) activated on the R7 controller's radar display. The warning began when the aircraft descended towards 12,000 feet, which exceeded the MSAW parameters for that area. For 84 seconds, the aircraft's altitude was varying between 12,000 to 12,700 feet. According to the ZLA ARTCC minimum IFR altitude (MIA) chart, the MIA altitude for the aircraft's position was 9,000 feet MSL. At 1207:22, the pilot of N121LD transmitted his call sign twice.

At 1207:36 MST, after the controller acknowledged the pilot's transmission, the pilot said, "We have an emergency. We have ice everywhere. Picking up ice." The controller asked the pilot if he wanted to climb. The pilot said, "No, ma'am, we're out of the clouds right now and uh (unintelligible) in front of us. I'm trying to get out of the clouds." According to the controller, she thought the aircraft was at 12,500 feet, and in her judgment, she believed the flight was "okay" and did not issue a safety alert.

At 1207:59 MST, the controller replied, "...just descend at your discretion and just let me know when you can level off." At 1208:37, the pilot responded, "ice everywhere one lima delta one." The controller replied, "...roger just descend to get out of the ice and let me know what altitude you can descend to."

At 1208:55 MST, the controller instructed the pilot to maintain 9,000 feet but there were no further communications from the pilot. The last recorded radar return was at 1209:11 and the airplane's altitude was not recorded.

## ADDITIONAL INFORMATION

### Air Traffic Control Procedures

According to FAA Order 7110.65, The Controller's Handbook, controllers are advised to, "Issue pertinent information on observed/report weather or chaff areas." In addition, it states, "In areas of significant weather, plan ahead and be prepared to suggest, upon pilot request, the use of alternative routes/altitudes."

### Flight Service Station Procedures

According to FAA Order 7110.10S, "Flight Service", "When a pilot requests to file a flight plan only, ask if he/she requires the latest information on adverse conditions along the route of flight."

## Anti-Icing System Procedures

The preflight inspection procedures for the airplane indicate that the anti-icing system must be checked prior to takeoff. Power is applied to the anti-icing system, and the panels and propeller slinger ring must be checked for fluid emission.

According to the pilot's operating handbook for the airplane, "Flight into known icing conditions is prohibited. However, if icing is inadvertently encountered, determine the most appropriate operating mode:

NORMAL mode is selected when icing conditions are encountered and prior to ice accretion. Maximum system operating time is approximately 1 hour.

MAXIMUM mode is selected if ice has accreted to flight surfaces. Maximum system operating time is approximately 30 minutes. A warning indicates that the, "...ice protection system may not remove significant accumulations of ice if accretions are permitted to form with the ice protection system off."

The POH further notes that, "If icing is inadvertently encountered, the pilot switches the Ice Protection switch to NORMAL or MAXIMUM to initiate de-icing fluid flow along the protected surfaces. Pitot heat is turned ON and the time is noted to aid in estimating de-icing fluid reserve. The pilot then maneuvers to exit the icing conditions, turns cabin heat to maximum, and windshield defrost and alternate induction air ON. Upon exiting the icing conditions, the system is turned OFF."

## Cirrus Spin Recovery

The POH also states that the, "SR22 is not approved for spins, and has not been tested or certified for spin recovery characteristics. The only approved and demonstrated method of spin recovery is activation of the Cirrus Airframe Parachute System (CAPS). Because of this, if the aircraft departs controlled flight, the CAPS must be deployed." It further states, "Do not waste time and altitude trying to recover from a spiral/spin before activating CAPS."

## Wreckage Release

The wreckage was released to the owner's representative on August 16, 2007.

## Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	44,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>	Yes
<b>Medical Certification:</b>	Class 3 Without waivers/limitations	<b>Last FAA Medical Exam:</b>	July 1, 2005
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	July 1, 2005
<b>Flight Time:</b>	892 hours (Total, all aircraft), 384 hours (Total, this make and model), 746 hours (Pilot In Command, all aircraft), 110 hours (Last 90 days, all aircraft), 60 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Cirrus	<b>Registration:</b>	N121LD
<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>	1670
<b>Landing Gear Type:</b>	Tricycle	<b>Seats:</b>	4
<b>Date/Type of Last Inspection:</b>	November 1, 2005 Annual	<b>Certified Max Gross Wt.:</b>	3400 lbs
<b>Time Since Last Inspection:</b>	436.1 Hrs	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	436.1 Hrs at time of accident	<b>Engine Manufacturer:</b>	Textron Lycoming
<b>ELT:</b>	Installed, activated, aided in locating accident	<b>Engine Model/Series:</b>	IO-550-N
<b>Registered Owner:</b>	Innovative Hospitality Systems LLC	<b>Rated Power:</b>	310 Horsepower
<b>Operator:</b>	Luis A. Castro	<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	GCN,6609 ft msl	<b>Distance from Accident Site:</b>	80 Nautical Miles
<b>Observation Time:</b>	12:02 Local	<b>Direction from Accident Site:</b>	140°
<b>Lowest Cloud Condition:</b>	Few / 1600 ft AGL	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	Broken / 4400 ft AGL	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	14 knots / 20 knots	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	220°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	30.03 inches Hg	<b>Temperature/Dew Point:</b>	11°C / 6°C
<b>Precipitation and Obscuration:</b>	Heavy - Thunderstorm - Rain		
<b>Departure Point:</b>	S Lake Tahoe, CA (TVL )	<b>Type of Flight Plan Filed:</b>	IFR
<b>Destination:</b>	Grand Canyon NP, AZ (GCN )	<b>Type of Clearance:</b>	IFR
<b>Departure Time:</b>	10:30 Local	<b>Type of Airspace:</b>	

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Fatal	<b>Aircraft Damage:</b>	Destroyed
<b>Passenger Injuries:</b>	3 Fatal	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	4 Fatal	<b>Latitude, Longitude:</b>	

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Dunks, Kristi
<b>Additional Participating Persons:</b>	T R Proven; Federal Aviation Administration; Washington, DC Bradley Miller; Cirrus Design; Duluth, MN Hilton Hall; National Transportation Safety Board; Washington, DC Loren Groff; National Transportation Safety Board; Washington, DC Greg Salottolo; National Transportation Safety Board; Washington, DC Andrew Swick; Teledyne Continental; Mobile, AL Bryan Humphreys; CAV Aerospace; Consett, England Richard Ross; UK Air Accidents Investigation Branch; London, England Robert Molloy; National Transportation Safety Board; Washington, DC Thomas Barth; Am-Safe; Phoenix, AZ Joe Gregor; National Transportation Safety Board; Washington, DC
<b>Original Publish Date:</b>	January 31, 2008
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class</a>
<b>Note:</b>	The NTSB traveled to the scene of this accident.
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=64769">https://data.nts.gov/Docket?ProjectID=64769</a>

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).