Aviation Investigation Final Report

Location:	Sula, Montana	**Accident Number:**	WPR14FA231
Date & Time:	June 17, 2014, 17:00 Local	**Registration:**	N888GG
Aircraft:	Grumman G 21A	**Aircraft Damage:**	Destroyed
Defining Event:	Loss of control in flight	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Positioning		

Analysis

The airline transport pilot was repositioning the airplane to an airport near the owner's summer home. The airplane was not maintained for instrument flight, and the pilot had diverted the day before the accident due to weather. On the day of the accident, the pilot departed for the destination, but returned shortly after due to weather. After waiting for the weather conditions to improve, the pilot departed again that afternoon, and refueled the airplane at an intermediate airport before continuing toward the destination. The route of flight followed a highway that traversed a mountain pass.

A witness located along the highway stated that he saw the accident airplane traveling northbound toward the mountain pass, below the overcast cloud layer. He also stated that the mountain pass was obscured, and he could see a thunderstorm developing toward the west, which was moving east toward the pass. A second witness, located near the accident site, saw the airplane descend vertically from the base of the clouds while spinning in a level attitude and impact the ground. The second witness reported that it was snowing and that the visibility was about ¼ mile at the time of the accident.

The airplane impacted terrain in a level attitude, and was consumed by a postcrash fire. Examination of the flight controls, airframe, and engine revealed no mechanical malfunctions or anomalies that would have precluded normal operation. It is likely that the pilot experienced spatial disorientation and a subsequent loss of aircraft control upon encountering instrument meteorological conditions. The airplane exceeded its critical angle of attack and entered a flat spin at low altitude, resulting in an uncontrolled descent and impact with terrain.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's decision to continue flight into deteriorating weather conditions in an airplane not maintained

for instrument flight, which resulted in a loss of control due to spatial disorientation.

Findings

Personnel issues	Decision making/judgment - Pilot
Personnel issues	Aircraft control - Pilot
Personnel issues	Spatial disorientation - Pilot
Environmental issues	Low ceiling - Decision related to condition
Environmental issues	Low ceiling - Effect on operation
Environmental issues	Low visibility - Effect on operation

Factual Information

History of Flight

Maneuvering-low-alt flying	Other weather encounter
Maneuvering-low-alt flying	Loss of control in flight (Defining event)
Uncontrolled descent	Loss of visual reference

On June 17, 2014 about 1700 mountain daylight time, a Grumman G-21A airplane, N888GG, was destroyed by impact with terrain and a postcrash fire in the parking lot of the Lost Trail Powder Mountain Ski Area, about 13 miles south of Sula, Montana. The airplane was being operated by the pilot as a visual flight rules (VFR) cross-country positioning flight under the provisions of 14 Code of Federal Regulations Part 91. Instrument meteorological conditions (IFR) were reported in the area at the time of the accident, and the solo pilot received fatal injuries. The airplane departed Lemhi County Airport (KSMN), Salmon, Idaho, bound for Ravalli County Airport, Hamilton, Montana, about 1640.

During an interview with the National Transportation Safety Board (NTSB) investigator-in-charge (IIC) on June 18, the owner of the airplane said that the airplane was being repositioned to the Ravalli County Airport for the summer. The airplane arrived at the Dillon Airport (KDLN), Dillon Montana on Monday, June 16, but was unable to continue to Hamilton due to weather. The owner said the pilot was told to remain in Dillon until the weather cleared. The pilot told the owner that he might fly to Salmon the following morning and check the weather along the highway to Hamilton. The owner asked the pilot to telephone him before he departed. The owner said he did not receive a telephone call from the pilot.

During a telephone conversation with the NTSB IIC on June 18, a witness at the Dillon Airport said he had spoken with the pilot after he arrived. They talked about weather and routes. The witness said the following morning the airplane departed about 0830, but returned a short time later due to weather. He said the airplane remained in Dillon the rest of the day, and about 1630 the pilot said he'd probably be back in 30 minutes, and departed. The witness did not see the airplane again.

A Ravalli County Sheriff's representative told the IIC that he had spoken to a witness at the Lemhi County Airport who told him the airplane had stopped there, before departing northbound along highway 93 toward Hamilton.

A witness living along highway 93, about the 4,000 foot elevation, said he had seen the airplane northbound headed toward the mountain pass in the direction of Hamilton. The witness is a pilot and said he had flown the route many times. He said although the airplane was in VFR conditions under an overcast, and appeared to be at an altitude of about 6,500 feet when he saw it; the pass is higher, and appeared to be obscured. He further stated he could see what he thought was a thunderstorm developing to the west and moving east toward the pass.

The highway 93 mountain pass is just over 7,000 feet in elevation. Located at the summit are a visitor center and the base of operations for a ski area; including a lodge and parking lot.

An employee at the visitor center told the Sheriff's representative, and later the NTSB IIC, that the airplane arrived over her position at a very low altitude, just above the trees, and that it was snowing, and the visibility was about ¼ mile at the time. She said she saw the airplane "spin around" 6 to 7 times descending vertically before it impacted the ground in the parking lot of the ski area.

Upon impact, the airplane burst into flames, initial responders were not able to approach the wreckage due to the intense heat and flame.

On June 18, the NTSB IIC, accompanied by a Federal Aviation Administration (FAA) air safety inspector, examined the airplane at the accident site.

Pilot Information

Certificate:	Airline transport	**Age:**	62,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land; Multi-engine sea	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Glider; Helicopter	**Restraint Used:**	Unknown
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	Yes
Medical Certification:	Class 1 With waivers/limitations	**Last FAA Medical Exam:**	January 7, 2014
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 9800 hours (Total, all aircraft), 50 hours (Total, this make and model)		

The pilot age 62, held an airline transport pilot certificate with ratings for Airplane Single Engine Land and Sea, Airplane Multi-Engine Land and Sea, Glider, Rotorcraft; Helicopter, Flight Instructor; Airplane Single-Engine and Multi-Engine, Instrument Airplane, and Ground Instructor; Advanced and Instrument.

The pilot received a First Class Medical Certificate on January 7, 2014, with the limitation that he must wear corrective lenses.

No personal flight records were discovered for the pilot, and the aeronautical experience listed was obtained from a review of the airman's FAA records on file in the Airman and Medical Records Center in Oklahoma City. On the pilot's last application for medical certificate, dated January 7, 2014, he indicated that his total aeronautical experience consisted of about 9,800 hours, of which he listed 150 hours had been accrued in the previous 6 months.

Aircraft and Owner/Operator Information

Aircraft Make:	Grumman	**Registration:**	N888GG
Model/Series:	G 21A 3	**Aircraft Category:**	Airplane
Year of Manufacture:	1944	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	B-70
Landing Gear Type:	Tailwheel; Amphibian	**Seats:**	6
Date/Type of Last Inspection:	March 6, 2014 Annual	**Certified Max Gross Wt.:**	17637 lbs
Time Since Last Inspection:		**Engines:**	2 Reciprocating
Airframe Total Time:	6394 Hrs as of last inspection	**Engine Manufacturer:**	Pratt Whitney
ELT:	Installed	**Engine Model/Series:**	R-985-AN-14B
Registered Owner:	On file	**Rated Power:**	450 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

The airplane was a Grumman G21-A, N888GG, manufactured in 1944 and equipped with two Pratt and Whitney R-985-AN-14B engines.

No airframe or engine logbooks were discovered for examination, and were believed to have been onboard for the ferry flight, and consumed during the post-crash fire. The owner provided copies of maintenance records obtained from the maintenance facility that performed the last maintenance on the airplane.

According to maintenance facility records, both newly remanufactured engines had been installed on June 6, 2013 at an airframe total time of 6,323.8 hours. On March 6, 2014 with an airframe total time of 6,394.7 hours, the airplane underwent an extensive annual inspection. No major deficiencies were noted. The last known maintenance consisted of an oil change and minor adjustments and repairs completed on May 2, 2014, at a total airframe time of 6,434.4 hours.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Day
Observation Facility, Elevation:		**Distance from Accident Site:**	
Observation Time:		**Direction from Accident Site:**	
Lowest Cloud Condition:	500 ft AGL	**Visibility**	0 miles
Lowest Ceiling:	500 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:		**Temperature/Dew Point:**	
Precipitation and Obscuration:	Moderate - Showers - Snow		
Departure Point:	Salmon, ID (KSMN)	**Type of Flight Plan Filed:**	None
Destination:	Hamilton, MT (6S5)	**Type of Clearance:**	None
Departure Time:	16:20 Local	**Type of Airspace:**	Class G

The accident site was located about 36 miles north of the departure airport and about 39 miles south of the destination airport at an elevation of about 7,000 feet.

Weather observations taken at the departure airport about the time of departure reported; visibility 10 miles, wind calm. Cloud heights were reported as Few at 4,200 feet, Broken at 6,500 feet, and overcast at 7,500 feet.

A pilot witness who was on the ground along the route of flight, observed the airplane northbound along the highway headed toward the highway summit, which he described as obscured from his vantage point. He further reported a thunderstorm to the east of his position moving toward the highway summit pass.

Witnesses at the accident location described the weather throughout the day as overcast with ragged ceilings. Visibility variable from better than one mile to obscured at the surface and snowing.

A witness photograph taken shortly after the impact, showed visibility less than one-quarter mile in snow and an indefinite ceiling.

No weather observations were available at the destination airport; however, the trend was reported as partly sunny in the morning becoming mostly cloudy in the afternoon.

There is no record of the pilot having received an "official" weather briefing.

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	On-ground
Total Injuries:	1 Fatal	**Latitude, Longitude:**	45.692501,-113.951667

The airplane impacted on the south end of a snow ski area, parking lot, about 7,000 feet in elevation. The ski area parking lot is adjacent to an interstate highway summit, highway rest area, and a visitor center, and the surrounding mountain peaks exceed 8,000 feet in height. Witnesses observed the airplane exit the base of the overcast clouds in what was described as a flat spinning, vertical descent. Upon impact, the airplane was consumed by a postcrash fire.

On June 18, 2014, the NTSB IIC accompanied by an FAA Air Safety Inspector examined the wreckage. Although burned by the postcrash fire, the nose, tail, and wingtips were readily identifiable.

The airplane appeared to have impacted in a level attitude. There was no evidence of forward, rearward, or sideways movement, after impact. Witnesses stated that wreckage parts and pieces scattered about the parking lot had been projectiles from several small explosions subsequent to the impact and postcrash fire.

All of the airplane's control surfaces (rudder, ailerons, etc.) were present and control continuity was established to the cockpit area. Continuity to the individual cockpit controls was not established due to the extensive fire damage.

Externally, the wing leading edge appeared straight from wingtip to wingtip, and perpendicular to the centerline of the fuselage. The lower portion of the fuselage frames showed upward crushing.

The two radial engines were appropriately located within the wreckage. Five of the six propeller blades (three per engine) had broken off at their respective propeller hub. One blade remained attached to the propeller hub on the right engine. All of the propeller blades examined showed extreme torsional twisting, tip curl, and S-bending. The exhaust manifolds of both the right and left engines were examined, and both showed plastic, hot metal, folding and bending. There was no further examination of the engines.

Communications

After departure from the uncontrolled airport, no communications were heard from the accident airplane, and no air traffic control services were requested.

Medical and Pathological Information

A postmortem examination of the pilot was completed under the authority of the Forensic Science Division, Department of Justice, State of Montana, Missoula, Montana, on June 19, 2014. The examination revealed that the cause of death was attributed to blunt force injuries.

The FAA's Civil Aeromedical Institute (CAMI), Oklahoma City, Oklahoma, completed a toxicological examination on August 1, 2014. No toxicological anomalies were found.

Administrative Information

Investigator In Charge (IIC):	Lewis, Lawrence
Additional Participating Persons:	Jeffery Simmons; Federal Aviation Adminstration FSDO; Helena, MT
Original Publish Date:	March 15, 2017
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=89376