Aviation Investigation Final Report

Location:	Hailey, Idaho	**Accident Number:**	WPR12LA048
Date & Time:	November 29, 2011, 19:00 Local	**Registration:**	N36824
Aircraft:	Piper PA-32RT-300T	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Serious, 1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

During takeoff from an airport in a narrow valley on a dark night, the pilot lost sight of the lights around the runway environment while he attempted to engage the autopilot to assist in his navigation of the pre-programmed route. When he determined that his first attempt to engage the autopilot had not been successful, the pilot repeated the steps of the autopilot engagement process. As the pilot was completing his second attempt to engage the autopilot, the tower air traffic controller asked him if he was making a turn to the downwind leg. About the same time, the terrain warning signal on one of the airplane's global positioning system units began to sound. The pilot then realized that while he was trying to engage the autopilot, the airplane's heading had drifted and the airplane was headed toward rapidly rising terrain. Because it appeared to the pilot that he would not be able to avoid that terrain, he slowed the airplane and performed an emergency landing on "rough and comparatively level" snow-covered ground.

Several of the autopilot components and associated flight instruments were examined and tested; however, there was no evidence of preaccident mechanical malfunctions or failures that would have precluded normal operation or engagement. It is likely that the pilot's distraction with the autopilot engagement resulted in his failure to maintain his course alignment and clearance from terrain.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to maintain course heading and terrain clearance because he was distracted

by efforts to engage the autopilot shortly after takeoff on a dark night in mountainous terrain.

Findings

Aircraft	Altitude - Not attained/maintained
Personnel issues	Task monitoring/vigilance - Pilot
Personnel issues	Incorrect action performance - Pilot
Environmental issues	Mountainous/hilly terrain - Contributed to outcome
Environmental issues	Dark - Contributed to outcome

Factual Information

History of Flight

Initial climb	Course deviation
Initial climb	Off-field or emergency landing

On November 29, 2011, about 1900 mountain standard time, a Piper PA-32RT-300T, N36824, impacted the terrain during controlled flight about one mile east of Friedman Memorial Airport, Hailey, Idaho. The pilot received minor injuries, his passenger received serious injuries, and the airplane, which was owned and operated by the pilot, sustained substantial damage. The 14 Code of Federal Regulations Part 91 personal transportation flight, which had just departed Hailey for Nampa, Idaho, was being operated in night visual meteorological conditions. No flight plan had been filed.

According to the pilot, he had planned to depart Hailey while it was still light, but a delay in his passenger's activities resulted in a takeoff after dark. Prior to departing Hailey, he set up the entire route from Hailey through the instrument approach into Nampa, on his panel-mount GNS480 Global Positioning System (GPS), and then set up his yoke-mounted GPSMAP496 as a backup. His plan was to engage the autopilot soon after takeoff, and then to rely primarily on the coupled autopilot to maintain his heading in the narrow valley south of the airport, and to track the rest of the preset route. After listening to the Automatic Terminal Information Service recording, he continued with his plan to takeoff to the south in good visibility, with a tailwind of about 7 knots, on what he characterized as a dark night. After liftoff, because of the airplane's light weight (two occupants), and the higher than standard performance capabilities resulting from the cold ambient air temperature, the airplane climbed rapidly with a nose high pitch attitude. As a result of the high pitch attitude, the pilot lost direct visual reference with the lights around the runway environment before the airplane reached the departure end of the runway. Once he lost sight of the runway environment, the pilot transferred his attention, and his reference for controlled flight, to the airplane's instrument panel. During that process, the pilot attempted to engage the autopilot, so that he could rely on it to navigate the narrow valley running south from Hailey. Because the autopilot did not engage on the first attempt, the pilot went through the autopilot activation procedure a second time. Just as he was coming to the end of that process, the Hailey Tower controller asked him if he was turning downwind. About the same time, the GPSMAP496 terrain warning signal started sounding, and at that point in time that the pilot realized that while he was focused on getting the autopilot engaged, the airplane had turned from its original heading, and that it was heading east toward rapidly raising terrain. When the pilot saw the terrain, he quickly reached the conclusion that he would not be able to avoid it, so he slowed the airspeed to about 65 knots, and maneuvered the airplane toward an area of comparatively level ground, where he executed a controlled crash on the snow-covered hillside.

Because the pilot was not sure if there had been something wrong with the airplane's Century 2000 autopilot system, or whether he simply had not placed the autopilot engagement switch fully in the engage position, during the postaccident investigation process the NTSB Investigator-In-Charge (IIC) had a number of the airplane's components removed and tested at Century Flight Systems in Mineral Wells, Texas. The components that were taken to Century Flight Systems for testing under the direct oversight of another NTSB Accident Investigator were as follows: 1. 1D937-2050-311FF18 Flight Computer (s/n 2178G); 2. 52D67 Attitude Gyro (s/n T72374M); 3. 52D254 Directional gyro (s/n A6156G); 4.1C784-2-879 Roll Servo (s/n 1501; 5. 1C784-3-1052 Pitch Servo (s/n 1511). Although the test sequence found that impact damage kept the attitude gyro from erecting after spin-up, and that impact damage to two of the male electrical connector pins on the directional gyro resulted in no electrical output to the test screen, all other components showed normal, in specification, results, and no preimpact anomalies were found that would have kept the autopilot from engaging.

When the pilot completed the RECOMMENDATIONS section of the NTSB Form 6120.1 (Pilot/Operator Aircraft Accident/Incident Report), he made the following two recommendations: 1. Do not depart an airport in mountainous areas when single pilot and mountainous terrain is within 5 nautical miles of the airport; 2. Do not troubleshoot discrepancies within 5 nautical miles of the terrain, instead treat any discrepancy as an inoperable item.

Pilot Information

Certificate:	Private	**Age:**	56,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	October 17, 2011
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	January 4, 2010
Flight Time:	2003 hours (Total, all aircraft), 1302 hours (Total, this make and model), 1921 hours (Pilot In Command, all aircraft), 19 hours (Last 90 days, all aircraft), 4 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N36824
Model/Series:	PA-32RT-300T	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	32R-7887087
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	July 15, 2011 Annual	**Certified Max Gross Wt.:**	3600 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	3879 Hrs as of last inspection	**Engine Manufacturer:**	LYCOMING
ELT:	C91A installed, activated, did not aid in locating accident	**Engine Model/Series:**	TIO-540 SER
Registered Owner:	TOWER PAUL A	**Rated Power:**	300 Horsepower
Operator:	TOWER PAUL A	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Night
Observation Facility, Elevation:		**Distance from Accident Site:**	
Observation Time:		**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots / None	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	310°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.2 inches Hg	**Temperature/Dew Point:**	4°C / -4°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Hailey, ID	**Type of Flight Plan Filed:**	None
Destination:	Nampa, ID (KMAN)	**Type of Clearance:**	VFR
Departure Time:	18:55 Local	**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Serious	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious, 1 Minor	**Latitude, Longitude:**	43.338054,-114.219169

Administrative Information

Investigator In Charge (IIC):	Anderson, Orrin
Additional Participating Persons:	Mike Baird; Boise FSDO; Boise, ID
Original Publish Date:	February 14, 2013
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=82422