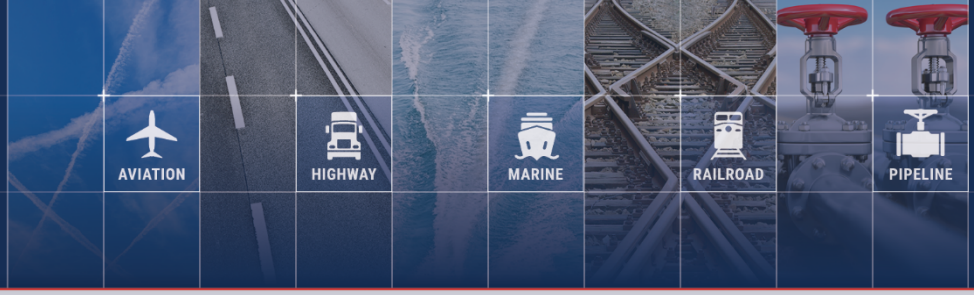

Aviation Investigation Final Report

Location:	Tolani Lake, Arizona	**Accident Number:**	WPR18LA197
Date & Time:	July 12, 2018, 03:05 Local	**Registration:**	N617MM
Aircraft:	Beech 90	**Aircraft Damage:**	Substantial
Defining Event:	Inflight upset	**Injuries:**	3 None
Flight Conducted Under:	Part 91: General aviation - Positioning		

Analysis

The pilot reported that the airplane was climbing in instrument meteorological conditions with light rain and with the autopilot engaged. The conditions were smooth with no turbulence and no known icing, although he had engaged all anti-icing systems. The airplane was climbing at 600 ft per minute at an airspeed of 130 kts from 17,000 ft to 19,000 ft. The pilot reported that he was working on an iPad when it stopped functioning. He said he was resetting the iPad when there was a hard control input to the left as the airplane was passing through about 17,500 ft. The airplane rolled left and pitched down as he attempted to regain control. The pilot reported the autopilot was fighting his control inputs during the event, and he disengaged it to affect the recovery. Onboard data equipment showed a steady increase in airplane pitch attitude and a steady decrease in airspeed before the upset. The airplane spiraled down, losing about 4,000 ft of altitude before the pilot regained control. The pilot manually flew the airplane to its destination and landed safely. The wings were substantially damaged.

Postaccident examination of the autopilot revealed no mechanical anomalies that would have precluded normal operation. The autopilot computer was removed and examined with no anomalies noted. Thus, the reason for the autopilot deviation could not be determined. It is likely that the pilot was distracted with resetting the iPad and thus did not adequately monitor the autopilot, which led to his delayed awareness of the autopilot deviation.

Probable Cause and Findings

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

An autopilot deviation during climb for undetermined reasons, which resulted in an in-flight upset and loss of airplane control. Contributing to the accident was the pilot's failure to adequately monitor flight systems due to a distraction.

Findings

Not determined	(general) - Unknown/Not determined
Personnel issues	Aircraft control - Pilot
Personnel issues	Monitoring equip/instruments - Pilot

Factual Information

History of Flight

Enroute-climb to cruise	Inflight upset (Defining event)

On July 12, 2018, about 0305 mountain standard time, a Beech C90A King Air airplane, N617MM, was substantially damaged when it was involved in an accident near Tolani Lake, Arizona. The pilot and two passengers were not injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 positioning flight.

Instrument meteorological conditions (IMC) were reported along the route of flight about the time of the accident, and the flight was operated on an instrument flight rules flight plan. The flight originated from Flagstaff Pulliam Airport (FLG), Flagstaff, Arizona, about 0250 and was destined for Gallup Municipal Airport (GUP), Gallup, New Mexico.

The pilot reported that the airplane was climbing out of 17,000 ft to a cruise altitude of 19,000 ft at 600 ft per minute and at an airspeed of 130 kts, with the autopilot engaged and set to capture 19,000 ft. The conditions were smooth with no turbulence and no known icing, although he had engaged all anti-icing systems, including the engine ice vanes. The pilot reported that he was working on the iPad when it stopped functioning. He was trying to reset it when there was a hard control input to the left as the airplane was at about 17,500 ft. He stated that when he engaged on the controls, the airspeed was increasing rapidly. The airplane was in a steep spiral, rolling left and pitching down as he attempted to regain control. The pilot reported the autopilot was fighting his control inputs during the event, and he disengaged it to affect the recovery. After several attempts, the pilot recovered the airplane, manually flew to the destination airport, and landed without further incident.

Postflight examination of the airplane revealed deformation of the leading edges and wrinkling of the upper wing skins on the left and right outboard wings. Further examination revealed damage to the forward spar on the left outboard wing.

The autopilot system was subjected to on-airplane testing after the accident. Initially, the autopilot modes were not annunciated on the control panel due to a dimmer switch that was on full dim. Contained tests revealed no anomalies with the autopilot system during on-airplane testing. The autopilot computer was removed and examined with no anomalies noted.

Review of data downloaded from the airplane's Stratus 2 receiver revealed a steady increase in pitch and decrease in airspeed from 16,770 ft through 18,861 ft. About 18,920 ft, the airplane began a left roll and continued through a series of about five-barrel rolls. The airplane recovered from the upset about 13,000 ft, then climbed to 16,000 ft and continued to the destination with no other anomalies.

The pilot reported IMC conditions, with the lowest cloud heights about 14,000 ft msl, a broken layer of clouds at 18,000 ft, and light rain. A weather study showed the airplane was in IMC with light rain at the time of the accident. The weather study showed that light to moderate icing conditions were present and forecast along the airplane's route of flight with echoes along the flight track indicating the possibility of supercooled large droplets.

Pilot Information

Certificate:	Airline transport; Commercial; Flight engineer	**Age:**	66,Male
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 1 With waivers/limitations	**Last FAA Medical Exam:**	August 22, 2017
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	March 16, 2018
Flight Time:	(Estimated) 14181 hours (Total, all aircraft), 1182 hours (Total, this make and model), 12978 hours (Pilot In Command, all aircraft), 115 hours (Last 90 days, all aircraft), 36 hours (Last 30 days, all aircraft), 7 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N617MM
Model/Series:	90 C90A	**Aircraft Category:**	Airplane
Year of Manufacture:	2000	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	LJ-1587
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	AAIP	**Certified Max Gross Wt.:**	10485 lbs
Time Since Last Inspection:		**Engines:**	2 Turbo prop
Airframe Total Time:		**Engine Manufacturer:**	Pratt & Whitney
ELT:	Installed, not activated	**Engine Model/Series:**	PT6
Registered Owner:		**Rated Power:**	
Operator:		**Operating Certificate(s) Held:**	On-demand air taxi (135)

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Night
Observation Facility, Elevation:	KINW,4883 ft msl	**Distance from Accident Site:**	18 Nautical Miles
Observation Time:	09:56 Local	**Direction from Accident Site:**	190°
Lowest Cloud Condition:		**Visibility**	10 miles
Lowest Ceiling:	Overcast / 11000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	210°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.18 inches Hg	**Temperature/Dew Point:**	19°C / 17°C
Precipitation and Obscuration:	Light - None - Rain		
Departure Point:	Flagstaff, AZ (FLG)	**Type of Flight Plan Filed:**	IFR
Destination:	Gallup, NM (GUP)	**Type of Clearance:**	IFR
Departure Time:	02:55 Local	**Type of Airspace:**	Class E

Wreckage and Impact Information

Crew Injuries:	3 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	3 None	**Latitude, Longitude:**	35.318054,-110.660003(est)

Administrative Information

Investigator In Charge (IIC):	Vanover, Jackie		
Additional Participating Persons:	Stan Ritter; FAA; Salt Lake City, UT Henry Soderlund; Textron Aviation; Wichita, KS		
Original Publish Date:	May 27, 2021	**Investigation Class:**	3
Note:	The NTSB did not travel to the scene of this accident.		
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=97772		

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available here.