



# Aviation Investigation Final Report

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<b>Location:</b>	Anchorage, Alaska	<b>Accident Number:</b>	ANC19TA014
<b>Date &amp; Time:</b>	February 13, 2019, 12:45 Local	<b>Registration:</b>	N40449
<b>Aircraft:</b>	Piper PA32R	<b>Aircraft Damage:</b>	None
<b>Defining Event:</b>	Turbulence encounter	<b>Injuries:</b>	1 Serious, 2 None
<b>Flight Conducted Under:</b>	Part 135: Air taxi & commuter - Non-scheduled		

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## Analysis

The pilot reported that the airplane encountered momentary severe turbulence while descending toward the destination airport. A passenger in the second row hit her head on the cabin ceiling and sustained a serious injury to her neck. The passenger stated that she was familiar with the operation of the seat belt and flew in the airplane about once or twice a month for many years, but on this flight, she did not tighten the lap belt sufficiently. Weather forecasts indicated that occasional to constant moderate turbulence was expected in the area; however, the pilot did not ensure that the passenger’s lap belt was appropriately fastened.

## Probable Cause and Findings

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

The pilot’s failure to ensure that the passenger’s lap belt was appropriately fastened for the forecast turbulent conditions, and the passenger’s failure to tighten her lap belt appropriately, which resulted in the passenger’s serious injury during an encounter with turbulence.

## Findings

<b>Environmental issues</b>	Clear air turbulence - Effect on personnel
<b>Environmental issues</b>	Clear air turbulence - Response/compensation
<b>Personnel issues</b>	Lack of action - Pilot
<b>Personnel issues</b>	Use of equip/system - Passenger

## Factual Information

### History of Flight

Enroute-descent	Turbulence encounter (Defining event)
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On February 13, 2019, about 1245 Alaska standard time, a Piper PA-32R-300 airplane, N40449, sustained no damage when it was involved in an accident near Anchorage, Alaska. One passenger received a serious injury, and the pilot and other passenger were not injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 135 non-scheduled passenger flight.

The pilot reported that during a visual flight rules flight from Lime Village Airport (AK2) to Merrill Field Airport (MRI), Anchorage, Alaska, the airplane encountered momentary severe turbulence as it descended through 3,500 feet mean sea level (msl) about 22 miles northwest of Anchorage. One of the two passengers, who was seated in the second row right seat, hit her head on the cabin ceiling. The flight landed at MRI without incident and the passenger was treated at a medical facility, where it was determined that she sustained serious injuries.

The injured passenger stated that her lap belt was fastened, but she did not tighten it enough. She was familiar with the use of the lap belt and flew with the company in the accident airplane once or twice a month for many years. She recalled that the pilot provided a passenger briefing, but could not remember if seat belt use was included.

The pilot reported that they experienced occasional light turbulence during most of the flight and that significant turbulence was not forecast. The unexpected severe turbulence lasted about 5 seconds.

A review of National Weather Service graphical forecast products for the area revealed a turbulence forecast issued at 0900 and valid for the time of the accident for occasional to constant moderate turbulence below 6,000 ft msl. The forecast issued at 1200 and valid for the time of the accident indicated isolated moderate turbulence transitioning to occasional to constant moderate turbulence from the surface to 8,000 ft msl with low level wind shear. A review of pilot reports indicated that the pilot of a similar airplane type experienced continuous moderate turbulence in the area of the encounter from 900 ft to 500 ft about 15 minutes after the occurrence.

## Pilot Information

<b>Certificate:</b>	Airline transport	<b>Age:</b>	51, Male
<b>Airplane Rating(s):</b>	Single-engine land; Single-engine sea; Multi-engine land	<b>Seat Occupied:</b>	Front
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	3-point
<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 2 With waivers/limitations	<b>Last FAA Medical Exam:</b>	November 30, 2018
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	May 25, 2018
<b>Flight Time:</b>	(Estimated) 21000 hours (Total, all aircraft), 13000 hours (Total, this make and model), 200 hours (Last 90 days, all aircraft), 75 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

## Passenger Information

<b>Certificate:</b>		<b>Age:</b>	Female
<b>Airplane Rating(s):</b>		<b>Seat Occupied:</b>	Right
<b>Other Aircraft Rating(s):</b>		<b>Restraint Used:</b>	Lap only
<b>Instrument Rating(s):</b>		<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>		<b>Toxicology Performed:</b>	
<b>Medical Certification:</b>		<b>Last FAA Medical Exam:</b>	
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>			

## Passenger Information

<b>Certificate:</b>		<b>Age:</b>	Male
<b>Airplane Rating(s):</b>		<b>Seat Occupied:</b>	Right
<b>Other Aircraft Rating(s):</b>		<b>Restraint Used:</b>	3-point
<b>Instrument Rating(s):</b>		<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>		<b>Toxicology Performed:</b>	
<b>Medical Certification:</b>		<b>Last FAA Medical Exam:</b>	
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>			

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Piper	<b>Registration:</b>	N40449
<b>Model/Series:</b>	PA32R 300	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	1977	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	32R-7780519
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	7
<b>Date/Type of Last Inspection:</b>	February 28, 2019 100 hour	<b>Certified Max Gross Wt.:</b>	
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	Reciprocating
<b>Airframe Total Time:</b>	22163 Hrs at time of accident	<b>Engine Manufacturer:</b>	Lycoming
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	IO-540 K1A5
<b>Registered Owner:</b>	Marsan William B	<b>Rated Power:</b>	300
<b>Operator:</b>	Sound Aviation	<b>Operating Certificate(s) Held:</b>	On-demand air taxi (135)
<b>Operator Does Business As:</b>		<b>Operator Designator Code:</b>	SN6C

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	PANC,132 ft msl	<b>Distance from Accident Site:</b>	18 Nautical Miles
<b>Observation Time:</b>	21:53 Local	<b>Direction from Accident Site:</b>	112°
<b>Lowest Cloud Condition:</b>	Clear	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	9 knots /	<b>Turbulence Type Forecast/Actual:</b>	Unknown / Unknown
<b>Wind Direction:</b>	30°	<b>Turbulence Severity Forecast/Actual:</b>	Light / Severe
<b>Altimeter Setting:</b>	29.84 inches Hg	<b>Temperature/Dew Point:</b>	-6°C / -13°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Lime Village, AK (2AK)	<b>Type of Flight Plan Filed:</b>	Company VFR
<b>Destination:</b>	Anchorage, AK (MRI)	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>	12:00 Local	<b>Type of Airspace:</b>	Class G

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 None	<b>Aircraft Damage:</b>	None
<b>Passenger Injuries:</b>	1 Serious, 1 None	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>		<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 Serious, 2 None	<b>Latitude, Longitude:</b>	61.3,-150.54(est)

## Administrative Information

**Investigator In Charge (IIC):** Price, Noreen

**Additional Participating Persons:**

**Original Publish Date:** July 15, 2021

**Last Revision Date:**

**Investigation Class:** [Class 3](#)

**Note:** The NTSB did not travel to the scene of this accident.

**Investigation Docket:** <https://data.ntsb.gov/Docket?ProjectID=99022>

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](#).