



Aviation Investigation Final Report

Location:	WATKINS, Colorado	Accident Number:	FTW96LA403
Date & Time:	September 28, 1996, 05:35 Local	Registration:	N37P
Aircraft:	Piper PA-30	Aircraft Damage:	Substantial
Defining Event:		Injuries:	2 Minor, 1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

While taking off on a cross-country flight, the aircraft became airborne but would neither climb nor accelerate. The aircraft weight was 3,670 pounds, which was approximately 100 pounds below maximum. The density altitude was 6,000 feet msl. The aircraft was equipped with manual turbochargers which were not being used. According to the operating instruction for the aircraft, the turbochargers should be used for high altitude takeoff to obtain the desired manifold pressure of 29.5 inches at 2,700 rpm. The engines were capable of producing only 23.5 inches of manifold pressure without the turbochargers engaged and this power was insufficient for climb at the weight and speed used.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the pilot-in-command's failure to use proper procedures and engage the turbochargers for takeoff from a high altitude airport. A factor was the high density altitude.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings

1. (F) WEATHER CONDITION - HIGH DENSITY ALTITUDE
2. (C) PROCEDURES/DIRECTIVES - NOT FOLLOWED - PILOT IN COMMAND

Factual Information

On September 28, 1996, at 0535 mountain daylight time, a Piper PA-30, N37P, settled onto the ground during initial climb after takeoff from Front Range Airport, Watkins, Colorado. The commercial pilot in command received minor injuries, the commercial pilot occupying the right seat was not injured, and the passenger occupying the right rear seat received minor injuries. The aircraft sustained substantial damage from impact and postimpact fire. Visual meteorological conditions prevailed for this personal flight operating under Title 14 CFR Part 91 and a VFR flight plan was filed, but had not been activated at the time of the accident. The intended destination was Sacramento, California.

According to available information, the three occupants met at Front Range Airport at 0430, performed a preflight and filed a flight plan. They all indicated that engine start, taxi, and run-up were normal. Based on a composite of information provided by the occupants. They were performing a non turbocharged, flaps up takeoff at a gross weight approximately 100 pounds below maximum with a density altitude of 6,000 feet and calm winds. Takeoff was on runway 26.

The pilot not flying said he told the pilot flying to accelerate to 100 mph (miles per hour) before rotation and then accelerate to 110 mph for initial climb. The account given by this pilot was that the aircraft was rotated at 90 mph and became airborne in ground effect with acceleration to 100 mph. He said that the VSI (vertical speed indicator) stayed at zero and the aircraft decelerated to about 85 knots. He said that at that point he "slammed" the turbochargers on. (This aircraft was equipped with manual waste gate turbochargers). The aircraft then turned to the right and impacted the ground approximately one-half mile off the end of the runway. The left tip tank caught fire and the occupants exited the aircraft and extinguished the fire by kicking dirt on it. The rear seat occupant then called 911 on his cellular telephone and notified emergency personnel. The right front seat occupant was transported to the hospital with facial lacerations, and later the left front seat occupant sought medical attention due to some head bruises and nausea.

According to the pilot in command, there were three commercial pilots on board the aircraft. One of the pilots, who was occupying the right rear seat was a CFI. The person who was acting as pilot in command was occupying the left front seat and the other commercial pilot was in the right front seat. All were instrument certified and the two persons in front were part owners of the aircraft. The left front seat occupant was the pilot flying. The pilot in command said they did not think they needed to use the turbochargers for this takeoff.

Information provided by the occupants indicates the right front seat occupant had approximately 120 hours in the aircraft and the pilot flying had approximately 56 hours in the aircraft.

Takeoff power, according to the manufacturer's flight operations handbook, is 2,700 rpm (revolutions per minute) at 29.5 inches of manifold pressure.

The aircraft was equipped with RAYJAY, manual, vernier control turbochargers. The flight manual states: "When taking off from fields of high elevation use the turbochargers to obtain a power setting of 29.5 inches of manifold pressure and use the vernier control for fine adjustment."

According to information provided by Lycoming, the IO-320-B series engine is capable of producing a maximum of 23.5 inches of manifold pressure at 6,000 feet elevation when operating as a normally aspirated engine.

According to information provided by Piper Aircraft, 23.5 inches of manifold pressure at 2,700 rpm, will not provide sufficient power for climb at speeds below 110 knots at a gross weight of 3,670 pounds, which was the stated takeoff weight.

Pilot Information

Certificate:	Commercial	Age:	25,Female
Airplane Rating(s):	Single-engine land; Multi-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 2 Valid Medical-w/ waivers/lim	Last FAA Medical Exam:	October 9, 1995
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	345 hours (Total, all aircraft), 36 hours (Total, this make and model), 278 hours (Pilot In Command, all aircraft), 15 hours (Last 90 days, all aircraft), 2 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N37P
Model/Series:	PA-30 PA-30	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	30-1457
Landing Gear Type:	Retractable - Tricycle	Seats:	4
Date/Type of Last Inspection:	March 10, 1996 Annual	Certified Max Gross Wt.:	3725 lbs
Time Since Last Inspection:	141 Hrs	Engines:	2 Reciprocating
Airframe Total Time:	5607 Hrs	Engine Manufacturer:	Lycoming
ELT:	Installed, activated, did not aid in locating accident	Engine Model/Series:	IO-320-B1A
Registered Owner:	CKB AVIATION, LLC	Rated Power:	160 Horsepower
Operator:		Operating Certificate(s) Held:	None
Operator Does Business As:		Operator Designator Code:	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Night/bright
Observation Facility, Elevation:	FTG ,5500 ft msl	Distance from Accident Site:	2 Nautical Miles
Observation Time:	05:53 Local	Direction from Accident Site:	80°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	12 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	210°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	7°C / 1°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	, CO (FTG)	Type of Flight Plan Filed:	None
Destination:	SACRAMENTO , CA (061)	Type of Clearance:	None
Departure Time:	05:35 Local	Type of Airspace:	Class G

Airport Information

Airport:	FRONT RANGE FTG	Runway Surface Type:	Asphalt
Airport Elevation:	5500 ft msl	Runway Surface Condition:	Dry
Runway Used:	26	IFR Approach:	
Runway Length/Width:	8000 ft / 100 ft	VFR Approach/Landing:	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Minor, 1 None	Aircraft Damage:	Substantial
Passenger Injuries:	1 Minor	Aircraft Fire:	On-ground
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 Minor, 1 None	Latitude, Longitude:	39.749809,-104.599678(est)

Administrative Information

Investigator In Charge (IIC):	Wiemeyer, Norman
Additional Participating Persons:	BUDDY MAKIN; DENVER , CO
Original Publish Date:	March 31, 1998
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=19991

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