



## National Transportation Safety Board Aviation Accident Factual Report

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<b>Location:</b>	Spring Branch, TX	<b>Accident Number:</b>	CEN20TA031
<b>Date &amp; Time:</b>	12/06/2019, 1315 CDT	<b>Registration:</b>	N408P
<b>Aircraft:</b>	Beech 36	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Loss of control in flight	<b>Injuries:</b>	5 None
<b>Flight Conducted Under:</b>	Part 91: General Aviation - Personal		

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On December 6, 2019, about 1315 central standard time, a Beechcraft A36 airplane, N408P, sustained substantial damage during an impact with terrain following an aborted takeoff at Kestrel Airpark (1T7), Spring Branch, Texas. The airplane was registered to Aviation Professionals LLC and operated by the pilot as a Title 14 *Code of Federal Regulations* Part 91 flight. The private pilot and four passengers were uninjured. Visual meteorological conditions prevailed and a visual flight rules flight plan had been filed for the accident flight to Ennis, Texas (F41).

On the day of the accident, the pilot had just from F41 to 1T7. He stated that prior to departure from F41, he had topped off the fuel tanks, which resulted in 80 gallons of fuel for the 1 hour flight. He estimated the fuel burn to be about 17 gallons. He stated that after landing at 1T7, he loaded the 4 passengers and completed an engine run-up, with no anomalies noted. He did note however, that the weight was "more of a load than last time." He stated that due to the crosswind, he elected to utilize no flaps for the takeoff. At the end of the runway, he held the brakes, applied full power then released the brakes for takeoff. He stated that the engine sounded normal, but the airplane would not generate lift. When the airplane reached a speed of about 80 knots, he tried to rotate, but it would not fly and he felt it "shudder." The pilot said he then reduced the engine power to abort the takeoff and maneuvered the airplane into the grass to slow it down, resulting in substantial damage to both wings. The pilot added that he thought the airplane reached 4 to 6 ft of altitude.

When asked, the pilot stated that he was unaware of the density altitude at the time of departure and also stated that he used 2,100 lbs for the basic empty weight of the airplane and did not think the airplane was close to the maximum gross weight. The airplane owner provided the most recent weight and balance to the National Transportation Safety Board (NTSB) Investigator-In-Charge (IIC).

According to occupant weights as provided by the Texas Highway Patrol from driver's license information, the total occupant weight was 765 lbs. The pilot stated that he had between 40 and 50 lbs of cargo behind the front seats and 75 lbs in the cargo compartment (aft baggage limit was 70 lbs) in addition to about 63 gallons of fuel, which weighed about 378 lbs. A post-

accident weight and balance was conducted by the NTSB IIC using seating and cargo locations provided by the pilot. The takeoff weight of the airplane was about 3,881.34 lbs and the center of gravity was 86.00 inches aft of datum.

The pilot's operating handbook for the accident airplane lists a maximum takeoff weight of 3,650 lbs. At maximum takeoff weight, the aft center of gravity limit is 87.7 inches. The handbook does not provide a method for interpolation of center of gravity limits for weights in excess of the maximum takeoff weight.

According to the Federal Aviation Administration (FAA) Airport Facilities Directory, 1T7 is a public airport with runways 30 and 12. The airplane was attempting a takeoff from runway 30 which is 3,000 ft long and 40 ft wide and sloped 1.4% up. The field elevation is 1,261 ft above mean sea level (MSL) and a note under airport remarks states "Rwy 30 rises rapidly at north end."

The closest official weather reporting station at the San Antonio Airport (SAT), San Antonio, Texas, located about 17 mile south of the accident location, at an elevation of 809 ft, reported a temperature of 24°C and a dewpoint of 6°C. By utilizing the SAT altimeter setting of 30.17 combined with the 1T7 field elevation of 1,261 ft, the density altitude at the time of the accident was about 2,091 ft.

A review of the manufacturer's supplied flaps retracted takeoff distance chart, located in the pilot's operating handbook, revealed that the airplane's weight at the time of the accident exceeded the chart's performance parameters. As a result, takeoff performance calculations could not be determined. The maximum weight for which takeoff data was supplied was 3,650 lbs. Furthermore, the data provided did not include penalties or enhancements for sloped runways.

The FAA publication titled *Pilot's Handbook of Aeronautical Knowledge* (FAA-H-8083-25B) contains information as it relates to takeoff performance considerations. Regarding takeoff weight, it contains the following information:

"...the effect of gross weight on takeoff distance is significant, and proper consideration of this item must be made in predicting the aircraft's takeoff distance. Increased gross weight can be considered to produce a threefold effect on takeoff performance:

1. Higher lift-off speed
2. Greater mass to accelerate
3. Increased retarding force (drag and ground friction)

If the gross weight increases, a greater speed is necessary to produce the greater lift necessary to get the aircraft airborne at the takeoff lift coefficient."

It also states "[an] upsloping runway impedes acceleration and results in a longer ground run during takeoff."

14 CFR 91.103 states, in part:

Each pilot in command shall, before beginning a flight, become familiar with all available information concerning that flight. This information must include—

(a) For a flight under IFR or a flight not in the vicinity of an airport, weather reports and forecasts, fuel requirements, alternatives available if the planned flight cannot be completed, and any known traffic delays of which the pilot in command has been advised by ATC;

(b) For any flight, runway lengths at airports of intended use, and the following takeoff and landing distance information:

(1) For civil aircraft for which an approved Airplane or Rotorcraft Flight Manual containing takeoff and landing distance data is required, the takeoff and landing distance data contained therein.

### Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	32, Male
<b>Airplane Rating(s):</b>	Single-engine Land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	
<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 3 With Waivers/Limitations	<b>Last FAA Medical Exam:</b>	06/05/2019
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	08/12/2019
<b>Flight Time:</b>	132 hours (Total, all aircraft), 43 hours (Total, this make and model), 34 hours (Pilot In Command, all aircraft), 23 hours (Last 90 days, all aircraft), 7 hours (Last 30 days, all aircraft)		

## Aircraft and Owner/Operator Information

Aircraft Make:	Beech	Registration:	N408P
Model/Series:	36 NO SERIES	Aircraft Category:	Airplane
Year of Manufacture:	2004	Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	E-3580
Landing Gear Type:	Retractable - Tricycle	Seats:	6
Date/Type of Last Inspection:		Certified Max Gross Wt.:	3651 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:		Engine Manufacturer:	Continental Motors
ELT:		Engine Model/Series:	IO-550
Registered Owner:	Aviation Professionals Llc	Rated Power:	
Operator:	On file	Operating Certificate(s) Held:	None

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	KSAT, 809 ft msl	Distance from Accident Site:	17 Nautical Miles
Observation Time:	1951 UTC	Direction from Accident Site:	188°
Lowest Cloud Condition:	Few / 25000 ft agl	Visibility	10 Miles
Lowest Ceiling:		Visibility (RVR):	
Wind Speed/Gusts:	9 knots /	Turbulence Type Forecast/Actual:	None / None
Wind Direction:	350°	Turbulence Severity Forecast/Actual:	N/A / N/A
Altimeter Setting:	30.17 inches Hg	Temperature/Dew Point:	24° C / 6° C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	San Antonio, TX (1T7)	Type of Flight Plan Filed:	VFR
Destination:	Ennis, TX (F41)	Type of Clearance:	None
Departure Time:	1300 CST	Type of Airspace:	Class G

## Airport Information

Airport:	Kestrel Airpark (1T7)	Runway Surface Type:	Asphalt
Airport Elevation:	1261 ft	Runway Surface Condition:	Dry
Runway Used:	30	IFR Approach:	None
Runway Length/Width:	3000 ft / 40 ft	VFR Approach/Landing:	None

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>	4 None	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	5 None	<b>Latitude, Longitude:</b>	29.811667, -98.426111

## Administrative Information

<b>Investigator In Charge (IIC):</b>	David S Williams
<b>Additional Participating Persons:</b>	Thomas Ballard; FAA; San Antonio, TX
<b>Note:</b>	The NTSB did not travel to the scene of this accident.
<b>Investigation Docket:</b>	<a href="http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=100667">http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=100667</a>