Aviation Investigation Final Report

Location:	Glenpool, Oklahoma	**Accident Number:**	DFW08FA015
Date & Time:	October 17, 2007, 14:02 Local	**Registration:**	N978TL
Aircraft:	Beech A36	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	5 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The private pilot borrowed a friend's airplane and topped it off with fuel prior to departing on a cross country flight with four passengers. The pilot also obtained a weather briefing and was aware of the high winds that existed at the airport and that moderate turbulence was forecasted along his route of flight. After he departed, several witnesses reported that the airplane was having difficulty climbing and maintaining control. The airplane collided with a row of unmarked power lines located about 3.4 miles south of the runway; caught on fire, then fell to the ground, and burned. An estimated weight and balance calculation revealed that the airplane was under its published maximum gross weight (3,600 pounds) by approximately 130.5 pounds, and was within the center of gravity limitation for takeoff and slightly aft of the allowable center of gravity limits for landing at the intended destination. Examination of the engine and the airframe revealed that there were no mechanical deficiencies, and damage to the propeller blades was consistent with the propeller rotating under a condition of high power at the time of impact.

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 control of the airplane after departure, which resulted in a collision with power lines. A factor was the high winds.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings
1. (F) WEATHER CONDITION - HIGH WIND
2. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND

Occurrence #2: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: DESCENT - UNCONTROLLED

Findings
3. OBJECT - WIRE,STATIC

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings
4. TERRAIN CONDITION - GROUND

Factual Information

HISTORY OF FLIGHT

On October 17, 2007, about 1402 central daylight time, a single-engine Beech A36 airplane, N978TL, was destroyed when it collided with power lines and terrain shortly after departure from the Richard L. Jones Airport (RVS), Tulsa, Oklahoma. The airplane crashed south of the airport in the town of Glenpool, Oklahoma. The instrument rated private pilot and the four passengers were fatally injured. The airplane was registered to and operated by Transportation Locators Limited LLC, of Tulsa, Oklahoma. An instrument flight rules (IFR) flight plan was filed for the cross-country flight that departed at 1357, and was destined for the Sugarland Regional Airport (SGS) near Sugarland, Texas. Visual meteorological conditions prevailed for the personal flight conducted under 14 Code of Federal Regulations Part 91.

The owner of the airplane told a Federal Aviation Administration (FAA) inspector that the pilot, who owned a 4-seat Beech BE-35J airplane, had borrowed his 5-seat A36 airplane to fly the four passengers to Sugarland, Texas, for a family trip. The pilot had planned to stay with the airplane and fly the family back to Tulsa after the visit.

Prior to departure, at 1239, the pilot contacted the Fort Worth Automated Flight Service Station (AFSS), Fort Worth, Texas, and told a briefer that he planned to depart around 1330. He also stated, "I've gotten a DUATS briefing and everything, I just wanted to make sure things were holding together okay for me and I didn't have uh, any serious convection problems." The pilot mentioned that he was concerned about weather "hazards" along the route because he had children onboard the airplane. The briefer informed the pilot that convective activity was forecasted to begin in the Tulsa, Oklahoma, area after 1500, and to expect moderate turbulence along his route of flight below 15,000 feet. The pilot informed the controller that he would be departing before the forecasted thunderstorms and that the wind was "blowing" at RVS. The briefing ended at 1245.

A review of air traffic control communications revealed that at 1347, the pilot contacted ground control and received an IFR clearance to Sugarland, Texas, and instructions to taxi to Runway 19R. At 1352, the pilot contacted the control tower and stated he was ready for take off at Runway 19R. A controller instructed the pilot to hold short. At this time, the controller informed the pilot that the wind was from 150 degrees, variable to 200 degrees at 20 knots, gusting to 25 knots. The pilot was then instructed to continue holding short of the runway for IFR separation, and he acknowledged. A few minutes later, a controller informed the pilot that the wind was from 170 degrees at 20 knots followed two minutes later by another wind warning from 160 degrees, variable to 210 degrees at 28 knots. The pilot was again advised to continue holding short of the runway.

At 1357, the controller cleared the pilot for takeoff with "no delay." The controller observed the airplane takeoff and begin to climb. She reported that the pilot "had sucked his gear up quickly, quicker than what seemed normal." Another controller, who was in the tower cab and relieving the on-duty controller, also observed the airplane as it departed. She stated that when the airplane was approximately 200-300 feet above the runway, the pilot, "sucked up his gear before the A1 intersection on runway 19R, which is 2,800 feet from the threshold..." She also stated that the airplane was not climbing very fast, and described the weather as "windy and gusty" with the visibility as "10 miles or better." There was a scattered cloud layer at 6,500 feet.

At 1400, the tower controller, who had just come on-duty, instructed the pilot to contact departure control, but he never responded. About two minutes later, a Tulsa Approach controller contacted the tower controller and reported that they had a received a low altitude alert on the airplane, and that the pilot never initiated contact with them. Several attempts were then made to contact the pilot, but to no avail.

A review of radar data revealed the airplane had climbed to an altitude of 1,300 feet mean sea level (msl) while on a southwesterly heading, before it began to descend. The last radar return was received at 1401 at an altitude of 1,100 feet msl. The control tower manager reported seeing the airplane on radar when it was at an altitude of 1,200 feet msl and at a ground speed of 70 knots. A few moments later he noted it had descended to 1,100 feet msl.

Several witnesses observed the airplane and provided statements to the Glenpool Oklahoma Police Department. One witness was in her home, which was located directly adjacent to the accident site. She stated that she heard the airplane's engine "spitting and sputtering very loudly." When she looked out her window, she saw the airplane collide with the power lines, hang for second, burst into flames, then fall to the ground and burn.

A second witness was located just north of the accident site in a home that was under construction, when he first observed the airplane. He said the airplane appeared to be having engine trouble and was trying to "pull up over the power lines." The airplane then collided with the lines and burst into a "large fireball" and fell to the ground.

A third and fourth witness reported that the airplane was "struggling to maintain control" and that it was "flipping from side to side having difficulty flying." The airplane then nosed down, collided with power lines, and then the ground.

A pilot, who was also an airframe and power plant mechanic, and owned an aircraft engine business based at the airport, stated that he observed the airplane departing Runway 19R. He said, "It was so windy that I couldn't hear the engine." Once airborne, the airplane began to descend and it "appeared to go below the 40 foot roof line of the adjacent golf course club house." The airplane then pitched back up and appeared to climb. He said, "Something was clearly wrong, something was going on inside the airplane." The gentleman said that he has witnessed "thousands" of airplanes take off from runway 19R, and for him to get up and run

outside to watch a departure, there had to be something wrong.

In a written statement, a friend of the pilot, who was also flew and owned a Beech A36 airplane, stated that he was at the owner's hangar when the pilot arrived to pick up the airplane. The friend, who had known the pilot for over five years, and who had flown that accident airplane on two "successful" flights the day earlier, helped him pull the airplane from the hangar and park it on the taxiway. While waiting for the fuel truck to arrive, the friend noticed that the pilot "seemed nervous and preoccupied, not his usual self, which was normally happy and outgoing." The friend asked the pilot if he could post-pone the trip until the following day, when the weather was forecasted to be better en route. The pilot responded that he "had to go today." The friend described the weather as "very windy, cloudy, and storms were forecast in the area." After the airplane was fueled, the pilot asked his friend to join him in the airplane while he started the engine. The friend said, "[The pilot] settled into the left seat, while I sat in the right. I noticed that he was staring at the instrument panel for a while, and then he asked where the magneto switches were. I thought that was a strange question, since he probably had at least 200 hours in that very airplane, plus he personally owns and flies his own Bonanza. I pointed out the appropriate switches on the far left and he turned them on. Then he couldn't find the 'starter button', which is actually a key, and he couldn't locate the fuel boost pump for starting. After I pointed out the proper switches, he started the airplane."

Once the pilot was ready to taxi, the friend told him that he wished he were going with him on the flight. And, the pilot responded, "I do too, so you could help me with the flying." The friend watched the pilot taxi the airplane down to his hangar. He later saw the airplane as it was taking off. He said, "...his gear was up and he was climbing. I remarked at the time how good the engine sounded, but how he was being buffeted by the high winds." Shortly after, he learned that the airplane struck power lines and had crashed.

A review of fueling records revealed that the pilot purchased 39 gallons of 100LL fuel on the day of the accident, which topped off the tanks for a total of 80 gallons (74 gallons usable). According to the line manager, who fueled the airplane and had conducted transactions with the pilot on numerous occasions, he said that the pilot "seemed normal - no signs of anger, anxiety, or being in a rush." After the airplane was fueled, the pilot got into the airplane, and taxied to his hangar. The line manager said the pilot was alone at the time, and he did not observe any luggage or cargo in the airplane.

PERSONNEL INFORMATION

The 63-year old pilot held a private pilot certificate for airplane single-engine land, and instrument airplane. The pilot's last FAA third-class medical was issued on March 28, 2007, with no limitations. At that time, he reported a total of 1,500 hours. The owner of the airplane reported that the pilot had accumulated approximately 200-hours of flight in the accident airplane.

The pilot owned a Beechcraft BE-35J airplane, which was based at RVS. The pilot, who was

also a priest, was reported to be very familiar with the airport and the local area.

AIRCRAFT INFORMATION

The 1978 model Beech A36, serial number E-978, was registered to Transportation Locators Limited LLC, Tulsa, Oklahoma.. The owner of the airplane reported that the airframe had accumulated a total of 1,623-hours since new. He further reported that he had owned the airplane for about 10 years.

The utility category airplane was powered by a single, fuel-injected, direct drive, air-cooled, 6 cylinder Teledyne Continental IO-520-BA37B engine (serial number 807172-R). The factory last remanufactured the engine on October 14, 1996.

The maintenance records for the airplane were reported to be in the airplane at the time of the accident and were never recovered.

According to the owner, an annual inspection was conducted two days before the accident, which included two flight tests. After one of the test flights, the spark plugs were removed and cleaned. FAA inspectors interviewed the mechanic who performed the annual inspection. The mechanic stated that no anomalies were noted during the annual inspection; however, the engine was reaching its manufacturer recommended overhaul limitation and he told the owner to start making plans to replace the engine.

The owner of the airplane reported that at the time of the annual inspection, the engine had accumulated a total of 1,620 hours since the last factory rebuild. The airframe had accumulated a total of 4,250 hours at the time of the annual inspection.

METEOROLOGICAL INFORMATION

At 1353, the Automated Surface Observation System (ASOS) located at RVS reported wind from 190 degrees at 16 knots, gusting to 29 knots, visibility 10 statute miles, broken cloud layer at 3,400 feet, broken cloud layer at 4,300 feet, temperature 80 degrees Fahrenheit, dew point 66 degrees Fahrenheit, altimeter setting of 29.46 inches of mercury, and peak wind from 190 degrees at 29 knots at 1345.

At 1407, the ASOS reported the wind was from 200 degrees at 13 knots, visibility 10 statute miles, broken cloud layer at 3,200 feet, broken cloud layer at 4,700 feet, temperature 80 degrees Fahrenheit, dew point 66 degrees Fahrenheit, altimeter setting of 29.46 inches of Mercury with lightning in the distance to the southwest and northwest.

A review of the air traffic control communications revealed that there were no warnings from arriving and departing aircraft regarding wind shear.

WRECKAGE AND IMPACT INFORMATION

The airplane collided with approximately 60-foot-tall unmarked power lines on a heading of 090 degrees before it came to rest inverted in a vacant lot on a magnetic heading of 310 degrees at an elevation of approximately 639 feet msl. The accident site was located along on the extended centerline of Runway 19R, at a measured distance of 3.42 miles from the departure end of the runway. All major components of the airplane were located at the accident site, and were within a 75-foot radius of the main wreckage. The accident occurred during daylight hours approximately 35 degrees 59 minutes north latitude and 096 degrees 00 minutes west longitude.

The airframe, with the exception of the outer portion of the right wing and the portion of the fuselage aft of the baggage compartment was consumed by fire. Most engine and flight instruments were destroyed by fire. The magneto switch was found in the "both" position with the ignition key still engaged. The avionics master switch was found locked in the "on" position. A slap mark was found on the airspeed indicator abeam the 65 knots marking, and the altimeter was found set at 29.58 inches.

Examination of the airplane revealed that landing gear was in the retracted position and the flap setting could not be determined due to thermal damage. However, flight control continuity was established for all flight controls from the respective surface to the cockpit. The elevator trim tab positions were measured at 1.5 inches, which equated to a 10 degrees tab-up position.

The fuel selector was found in the detent for the left fuel tank position. The strainer at the bottom of the fuel selector was inspected at the accident site. No debris was found in the fuel strainer; however, the strainer was found installed backwards. According to the airframe manufacturer, if the filter were installed backwards, it would be unable to filter fuel; however, it would not inhibit fuel flow to the engine. Engine control continuity was established for the throttle and mixture control cables. The throttle and the mixture control levers were found in the closed position. Control cable continuity could not be established for the propeller control due to impact damage to the governor and fire damage to the engine. The engine fuel pump was removed from the engine at the accident site. The fuel pump was rotated by hand and the drive coupling was intact. A couple of drops of fluid were noted inside the fuel pump.

The engine sustained extensive thermal damage. Both magnetos and all external fuel and oil lines were destroyed by fire. All accessories were found attached to the engine. No holes or signs of a catastrophic engine failure were found anywhere on the engine case. The engine was rotated about 10 degrees, and continuity to the accessory gear section was established. The six bottom spark plugs were removed from the engine. All six of the spark plugs had evidence of lead based debris in the electrode area. A boroscope inspection of the engine did not reveal any evidence of internal failure or disconnect. The strainer plug for the fuel injection control valve was removed. The finger screen was partially covered by a substantial amount of black charred debris. The engine was sent to Teledyne Continental Motors, where it was examined under the supervision of the Safety Board, on December 3, 2007. The examination

revealed that there were no abnormalities that would have prevented normal operation of the engine.
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The three-bladed McCauley propeller remained attached to the engine, and all three-propeller blades remained attached to the hub. The propeller assembly was examined at McCauley under the supervision of the FAA on February 12, 2008. The examination revealed that the outboard portion of the number one blade was broken off at impact. The number two and three blades exhibited forward blade bending. According to McCauley, this damage was consistent with the propeller rotating at impact, and being operated under a condition of high power at the time of impact. However, the exact engine RPM could not be determined.

Weight and Balance

An estimated weight and balance calculation was prepared based on information obtained from a weight and balance form (last dated 05/1998) that was found in the wreckage; fueling records, FAA medical records, driver's license information and data from the National Center for Health and Statistics. In addition, the severely burned baggage found in the wreckage was placed in paper bags and weighed on a bathroom scale. The estimate indicated that at the time the airplane departed it was under its published maximum gross weight (3,600 pounds) by approximately 130.5 pounds, and was with in the center of gravity limitation for take off and slightly aft of the allowable center of gravity limits for landing at the intended destination.

MEDICAL AND PATHOLOGICAL INFORMATION

The Office of Chief Medical Examiner, Tulsa, Oklahoma, conducted an autopsy on the pilot on October 18, 2007. The cause of death was determined to be, "Smoke inhalation and thermal injuries."

The Civil Aeromedical Institute (CAMI) in Oklahoma City, Oklahoma performed toxicological tests. No drugs were detected in the urine, no ethanol was detected in Vitreous, 18% Carbon Monoxide was detected in the blood, and 0.31 ug/ml Cyanide was detected in the blood. These results are consistent with the ingestion of combustion products during the post impact fire.

Pilot Information

Certificate:	Private	**Age:**	63,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:**	Yes
Medical Certification:	Class 3	**Last FAA Medical Exam:**	March 1, 2007
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	April 1, 2007
Flight Time:	1500 hours (Total, all aircraft), 50 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N978TL
Model/Series:	A36	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	E-978
Landing Gear Type:	Retractable - Tricycle	**Seats:**	5
Date/Type of Last Inspection:	October 1, 2007 Annual	**Certified Max Gross Wt.:**	3600 lbs
Time Since Last Inspection:	2 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	4250 Hrs	**Engine Manufacturer:**	Continental
ELT:	Installed, not activated	**Engine Model/Series:**	IO-520-BA(37)
Registered Owner:		**Rated Power:**	285 Horsepower
Operator:		**Operating Certificate(s) Held:**	None
Operator Does Business As:	Transportation Locators Limited LLC	**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	RVS,639 ft msl	**Distance from Accident Site:**	3 Nautical Miles
Observation Time:	13:53 Local	**Direction from Accident Site:**	10°
Lowest Cloud Condition:		**Visibility**	10 miles
Lowest Ceiling:	Broken / 3400 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	16 knots / 29 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	190°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.45 inches Hg	**Temperature/Dew Point:**	27°C / 19°C
Precipitation and Obscuration:			
Departure Point:	Tulsa, OK (RVS)	**Type of Flight Plan Filed:**	IFR
Destination:	Sugarland, TX (SGR)	**Type of Clearance:**	
Departure Time:	13:58 Local	**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	4 Fatal	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	On-ground
Total Injuries:	5 Fatal	**Latitude, Longitude:**	35.985832,-96.000274

Administrative Information

Investigator In Charge (IIC):	Casanova, Hector
Additional Participating Persons:	Gail G Sober; FAA FSDO; Oklahoma City, OK Joshua Cawthra; Teledyne Continental Motors; Mobile, AL Neil Sandvik; Hawker Beechcraft; Wichita, KS Thomas Knopp; McCauley; Vandalia, OH
Original Publish Date:	March 31, 2008
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=66921