Aviation Investigation Final Report

Location:	Fayetteville, Arkansas	**Accident Number:**	DFW07FA041
Date & Time:	December 18, 2006, 22:08 Local	**Registration:**	N1100J
Aircraft:	Beech A36	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	1 Fatal, 3 Serious
Flight Conducted Under:	Part 91: General aviation		

Analysis

The instrument rated commercial pilot was executing a night instrument approach to Runway 34 when the single-engine airplane collided with trees. The published approach minimums for the LDA/DME RWY 34 approach are an 800-foot ceiling and one-mile visibility. One surviving passenger on the airplane reported that as the airplane dropped below the clouds, it collided with the trees during the night. He added that it was foggy at the lower altitude. Another surviving passenger reported that the flight circled the airport once while the pilot was "punching numbers on a pad on the instrument panel." He also stated that "they couldn't see the runway lights" and the airplane collided with the trees short of the airport. About the time of the accident, a 400-foot ceiling was reported. After the accident, the runway lighting was verified as being operational. An examination of the airplane failed to reveal any anomalies with the airframe or systems. The aircraft collided with the trees in a wings level attitude approximately 4 miles from, and on the approach path to the runway. The instrument approach was flight checked as "fully operational" by the FAA following the accident. The pilot disregarded the glide slope information and tried to "duck" under the prevailing fog in order to see the approach lights.

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 clearance from obstacles. Contributing factors were the below approach/landing weather minimums, and the prevailing dark night conditions.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: APPROACH - IAF TO FAF/OUTER MARKER (IFR)

Findings
1. OBJECT - TREE(S)
2. (C) CLEARANCE - NOT MAINTAINED - PILOT IN COMMAND
3. (F) WEATHER CONDITION - BELOW APPROACH/LANDING MINIMUMS
4. (F) LIGHT CONDITION - DARK NIGHT

Occurrence #2: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: DESCENT - UNCONTROLLED

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

Findings
5. TERRAIN CONDITION - GROUND

Factual Information

HISTORY OF FLIGHT

On December 18, 2006, at 2208 central standard time, a single-engine Beech (Raytheon) A36 airplane, N1100J, was destroyed when it collided with terrain while executing an instrument approach to the Drake Field Airport (FYV) near Fayetteville, Arkansas. The instrument rated commercial pilot was fatally injured and three passengers received serious injuries. The airplane was registered to Hoss Airways, LLC.,of Fayetteville, Arkansas. An instrument flight rules (IFR) flight plan was filed for the 183-mile cross-country flight that originated from the Ardmore Downtown Executive Airport, near Ardmore, Oklahoma. Night instrument meteorological conditions prevailed for the business flight conducted under 14 Code of Federal Regulations Part 91.

The accident occurred during the return leg of a round-trip that departed from the Drake Field Airport earlier the same day.

One surviving passenger on the accident airplane reported that as the airplane dropped below the clouds it struck trees. He added that it was foggy at the lower altitude.

Another surviving passenger reported that the flight circled the airport once while the pilot was "punching numbers on a pad on the instrument panel." He added that "they couldn't see the runway lights" and the airplane collided with the trees during the approach.

PERSONNEL INFORMATION

The pilot held a commercial pilot certificate for airplane single-engine, multi-engine land, and instrument airplane. He also held a flight instructor certificate for airplane single-engine land. In addition, he held an airframe and powerplant mechanic's certificate. His last second-class Federal Aviation Administration (FAA) medical was issued on December 29, 2005. At the time of his last medical examination the pilot reported having accumulated 5,000 flight hours. The pilot's logbooks were not located during the course of the accident investigation. The airplane was reportedly based (hangared) at FYV. The pilot was reported to regularly fly form the airport and was well familiar with the approach being flown.

AIRCRAFT INFORMATION

The airplane was a 1996 model Beech A36, which is a single-engine, low-wing airplane, with retractable tricycle landing gear, and was configured with a total of 6 seats.

The airplane was powered by a 300-horsepower Continental IO-550-B reciprocating engine.

The engine was driving a McCauley 3-blade constant speed propeller.

The airplane's maintenance records were not located during the course of the investigation.

METEOROLOGICAL INFORMATION

The automated weather station at FYV reported at 2153, winds from 040 degrees at 4 knots, temperature 45 degrees Fahrenheit, dew point 44 degrees Fahrenheit, with an altimeter pressure setting of 30.38 inches of Mercury, visibility 10 miles and the ceiling at 400-feet overcast.

The automated weather station at the Northwest Arkansas Regional Airport, which is 18 miles north, at 2155 reported winds from 040 degrees at 6 knots, temperature 46 degrees Fahrenheit, dew point 12 degrees Fahrenheit, with an altimeter pressure setting of 30.31 inches of Mercury, visibility 7 miles and the ceiling at 700-feet broken.

COMMUNICATIONS

The pilot contacted the Fort Worth FCF/AFSS by telephone, at about 2046, and received a preflight weather briefing.

During the start of the instrument approach into FYV, the pilot was communicating with Fort Smith Air Traffic Control Approach and was cleared for the LDA/DME instrument approach to Runway 34. The pilot was then approved to change to the control tower's frequency. There was no further communication with the pilot.

No emergency or distress calls were received from the pilot of the accident airplane.

RADAR/GPS INFORMATION

A review of GPS data, downloaded from a portable GPS unit found in the wreckage, revealed the airplane approached the airfield from the southwest at an average airspeed of 212 mph, and at a cruise altitude of 7,000 feet. The initial descent started at 2148 and the airplane continued to descend smoothly while approaching the airfield. At 2200, the airplane was at an altitude of 4,798 feet, and airspeed of 210 mph. The last recording by the GPS unit was at 2207 at an altitude of 1,547 feet. The last radar return was at 2207, with an altitude of 1,700 feet and airspeed of 120 knots.

AERODROME INFORMATION

The Drake Field Airport (FYV) is a public use airport, located near Fayetteville, Arkansas. The airport has a control tower and features a single asphalt runway. The operating times of the control tower are Monday through Friday 0600 to 2200, and Saturday through Sunday 0800 to 2000. During non-tower operating times, pilots are to use the Common Traffic Advisory

Frequency (CTAF). Runway 16-34 is asphalt, 6,006-foot long and 100-foot wide. The field elevation is 1,251 feet mean sea level (msl). The instrument approach that the pilot was following was the LDA/DME RWY 34. This particular LDA approach is equipped with a glideslope. The published minimums for the instrument approach are an 800-foot ceiling and one-mile visibility. The Airport/Facility Directory notes that: when the tower is closed, MIRL (Medium Intensity Runway Lighting) is preset to medium intensity, and ODALS (Omni-Directional Approach Lights) are activated via CTAF.

WRECKAGE AND IMPACT INFORMATION

The wreckage of the airplane was examined at the accident site on December 19-20, 2006. All major components of the airplane were accounted for at the accident site. The airplane came to rest on its left side among trees, on a heading of approximately 300 degrees, about 4 miles south of the approach end of Runway 34. The initial impact point were trees positioned among a tree line. The tree line was located just aft of the crest of a hill and perpendicular to the airplane's flight path. Additionally, the impact marks left on the trees, indicate the airplane was about wings level, as it contacted the tree line.

The left wing separated from the fuselage near the wing root, at the point of the initial tree impact. The left fuel cap was intact and engaged in its receptacle. The left fuel bladder was breeched during the impact sequence. The left main landing gear remained attached to the wing and was found in the gear well.

About six feet of the outboard right wing separated at the area of the initial tree impact. Approximately five feet of the inboard portion of the right wing had separated from the fuselage and was found in an area of secondary tree impact. The remaining approximately two feet of the right wing remained attached to the fuselage. The right fuel bladder was breeched during the impact sequence.

The airplane's wreckage path then crossed about a 200-foot clearing, before entering a wooded area. From the initial impact point, to the main wreckage, the wreckage path extended approximately 372 feet down the knoll. The main wreckage consisted of the fuselage, engine, and portions of the empennage. There was no post-impact fire. Numerous pieces of the airplane were strewn along the wreckage path, including the airplane's instrument panel. Near the instrument panel, was a Garmin 530 GPS/Comm radio, (A review of the FAA Form 337, for the installation of the Garmin radio, instructed that a placard reading, " GPS not approved for IFR navigation" be placed on the instrument panel). All instruments and engine gauges, except for tachometer, were torn from the panel during the accident sequence. The altimeter (encoding), which had sustained impact damage, was located in the fuselage; had the barometric setting of 30.36.

Control cable continuity was established from the forward rudder bell crank to the aft rudder bell crank. Cable continuity was also confirmed from the "T" column to the aft elevator bellcrank. Aileron cable continuity was confirmed from the cockpit controls to the right aileron

bell crank and was also confirmed to one of the two left aileron bell crank locations. However, one of the left aileron bell crank cables was "broomstrawed" and approximately two feet of one of the left aileron control cables could not be accounted for. The left and right flap actuators were measured and corresponded to the approach-flaps position. The left elevator pitch trim actuator was destroyed during the impact sequence. The right elevator pitch trim actuator was measured at one and three eighths inches, which correlates to a 0-5 degrees tab down position.

The engine was partially disassembled in the field and visually inspected. All of the engine mounts were fractured and the engine remained attached to the airframe via the throttle cable, mixture control cable, and a battery cable. The engine was partially rotated about 300 degrees by hand using the propeller. Continuity was established from the forward area of the engine to the rear of the engine. The number one, five, and six cylinders exhibited extensive damage to the cylinder head and the rocker boxes were separated. Both magnetos were removed and rotated freely by hand with impulse coupling engagement. When rotated, both magnetos produced spark on all terminals. The top sparkplugs were removed and examined. The number one and five top spark plugs had impact damage. When compared to the Champion check-a-plug chart, the top spark plugs exhibited normal operation. The vacuum pump remained attached to the engine. The vacuum pump was disassembled and the rotor and vanes were intact. The vacuum pump drive shaft rotated freely by hand.

The examination of the engine did not reveal any pre-impact mechanical anomalies that would have prevented normal engine operation.

The propeller blades remained attached to the propeller hub and moved freely by hand. Blade one was bent opposite of the direction of rotation and exhibited 45 degree scratching on the blade face. The trailing edge of the propeller blade near the blade tip exhibited wave type bending. Blade two exhibited blade twisting and leading edge blade polishing. A portion of the propeller blade tip was missing. A large indentation was observed on the trailing edge about five inches inboard from the blade tip. Blade three exhibited "S" type bending throughout the length of the blade.

The examination of the propeller did not reveal any pre-impact mechanical anomalies that would have prevented normal operation.

A handheld GPS unit was recovered from the wreckage.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy examination was performed by the Arkansas State Crime Laboratory, Little Rock, Arkansas on December 20, 2006.

A toxicology examination was performed by the Federal Aviation Administration, Oklahoma City, Oklahoma on January 23, 2007.

ADDITIONAL INFORMATION

Shortly after the accident, the airport manager checked and verified that the approach lights were "on" and working normally.

Several days after the accident, the FAA flight checked the instrument approach to Runway 34. No problems were reported.

Pilot Information

Certificate:	Commercial	**Age:**	37,Male
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):	Airplane single-engine	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 Without waivers/limitations	**Last FAA Medical Exam:**	December 1, 2005
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	5000 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N1100J
Model/Series:	A36	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	E-3058
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	Unknown	**Certified Max Gross Wt.:**	3600 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Continental
ELT:	Installed, not activated	**Engine Model/Series:**	IO-550-B
Registered Owner:	Hoss Airways, LLC	**Rated Power:**	300 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Night
Observation Facility, Elevation:	FYV,1251 ft msl	**Distance from Accident Site:**	2 Nautical Miles
Observation Time:	21:53 Local	**Direction from Accident Site:**	352°
Lowest Cloud Condition:		**Visibility**	10 miles
Lowest Ceiling:	Overcast / 400 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	40°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.37 inches Hg	**Temperature/Dew Point:**	7°C / 6°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	ARDMORE, OK (1F0)	**Type of Flight Plan Filed:**	IFR
Destination:	FAYETTEVILLE, AR (FYV)	**Type of Clearance:**	IFR
Departure Time:		**Type of Airspace:**	

Airport Information

Airport:	Drake Field Airport FYV	**Runway Surface Type:**	Asphalt
Airport Elevation:	1251 ft msl	**Runway Surface Condition:**	Unknown
Runway Used:	34	**IFR Approach:**	LDA
Runway Length/Width:	6006 ft / 100 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	3 Serious	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal, 3 Serious	**Latitude, Longitude:**	35.946109,-94.163055

Administrative Information

Investigator In Charge (IIC):	Hatch, Craig
Additional Participating Persons:	Wes Crook; Federal Aviation Administration; Little Rock, AR Josh Cawthra; Teledyne Continental Motors, Inc.; Mobile, AL Russell Schrock; Raytheon Aircraft Company; Wichita, KS
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Investigation Class:	Class
Note:	
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