Aviation Investigation Final Report

Location:	Montrose, Colorado	**Accident Number:**	DEN06FA091
Date & Time:	July 3, 2006, 10:00 Local	**Registration:**	N1800Z
Aircraft:	Beech A36TC	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The pilot, who had recently purchased the airplane, was receiving type-specific flight instruction to comply with insurance policy requirements, and had accumulated 6 hours of instruction. When the lineman checked the fuel tanks on the morning of the accident, they were half full. The pilots declined his offer to refuel. The airplane had been aloft for about 1 hour, 15 minutes, when it arrived at another airport and made 2 full-stop landings. Numerous witnesses reported hearing the engine "sputtering and coughing" and seeing the extended landing gear being retracted before the airplane struck a parked semi truck in a residential neighborhood. It exploded on impact and both the airplane and semi truck were consumed by fire. The fuel selector valve was found positioned on the left tank. The airplane was equipped with standard fuel tanks. According to the Beech A36 "Pilot's Operating Handbook," each wing tank holds 40 gallons of fuel, of which 37 gallons are useable. Performance charts indicate each takeoff and climbout would consume approximately 3.5 gallons of fuel (10.5 gallons). The airplane took off and made two takeoffs and landings prior to the loss of power. The airplane had been aloft for approximately 1.25 hours. Cruise performance charts for 10,000 feet (+20 degrees C. ISA) vary between 9.5 and 14.0 gph (gallons per hour), depending on leaning technique.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the pilot's inadequate preflight planning/decision by not having the airplane refueled prior to takeoff, and allowing the engine to be starved of fuel because he failed to switch the fuel selector valve. A contributing factor was the flight instructor's inadequate supervision of the flight.

Findings

Occurrence #1: LOSS OF ENGINE POWER
Phase of Operation: APPROACH - VFR PATTERN - DOWNWIND

Findings
1. (C) PREFLIGHT PLANNING/PREPARATION - INADEQUATE - PILOT IN COMMAND
2. (C) REFUELING - NOT PERFORMED - PILOT IN COMMAND
3. (C) FLUID,FUEL - STARVATION
4. (C) FUEL TANK SELECTOR POSITION - IMPROPER - PILOT IN COMMAND
5. (F) SUPERVISION - INADEQUATE - PILOT IN COMMAND(CFI)

Occurrence #2: FORCED LANDING
Phase of Operation: DESCENT - EMERGENCY

Findings
6. GEAR RETRACTION - PERFORMED

Occurrence #3: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: DESCENT

Findings
7. OBJECT - TREE(S)
8. OBJECT - VEHICLE

Factual Information

HISTORY OF FLIGHT

On July 3, 2006, approximately 1000 mountain daylight time, a Beech A36TC, N1800Z, was destroyed when the it struck trees and impacted a semi truck in a residential neighborhood approximately 2 miles southeast of Montrose Regional Airport (MTJ), Montrose, Colorado. A post-impact fire ensued. Visual meteorological conditions prevailed at the time of the accident. The instructional flight was being conducted under the provisions of Title 14 Code of Federal Regulations Part 91 without a flight plan. The private pilot and ATP (airline transport pilot) -certificated flight instructor were fatally injured. There were no injuries to persons on the ground. The flight originated at Garfield County Regional Airport (RIL), Rifle, Colorado, approximately 0830.

The pilot purchased the airplane from Heartland Airplanes in Olathe, Kansas, and it was delivered to Rifle, Colorado, about two weeks before the accident. According to insurance papers found in the wreckage, the pilot was required to log "15 hours of dual instruction in [airplane] make/model with [an] approved certified flight instructor who meets ALL the requirements of the open pilot warranty" prior to solo. Prior to carrying passengers, the pilot was required to log "25 total hours in [airplane] make/model." On July 1, 2006, the pilot logged 6 hours with his flight instructor, who at the same time gave him his biennial flight review. No other Beech A36 flight time was recorded in the pilot's logbook.

The airplane was refueled three times on July 1: 44.9 gallons at 0917:27, 28.0 gallons at 1208:39, and 27.0 gallons at 1535:45. According to the line serviceman, each time the airplane was refueled, the tanks were filled "up to slots" (32 useable gallons each tank, see TESTS AND RESEARCH).

On the morning of the accident, the line serviceman pulled the airplane out of its hangar. Knowing that the pilots were en route to the airport, he visually checked the fuel tanks as a courtesy. He found them to be "half full." He offered to refuel the airplane but the pilots refused, saying they had sufficient fuel. They departed RIL approximately 0830 and arrived in MTJ approximately 0930.

According to the MTJ fixed base operator, all radio transmissions are tape-recorded. A UNICOM operator also makes handwritten entries on a log sheet. The following is based on that data:

0941 N1800Z made initial contact with the Unicom operator, and advised they would be taking off on runway 31.

0949 N1800Z announced it was turning from base leg onto final approach fro runway 31.

0950 Unicom transmission.

0951 N1800Z announced it had made a full stop landing, was clear of the runway and was taxiing back to runway 31 via taxiway B,

0952 Unicom transmission

0953 N1800Z announced it would be making a full stop landing and a takeoff on runway 31. This was the last communication with the airplane.

0959 Squelch break.

1002 Fire department is page out.

Nineteen witnesses were interviewed by telephone. Five of those witnesses submitted written statements.

Witness #9 said she was "positive" the engine was not running when the airplane passed over her house. She said the airplane was "gliding," and there was no noise coming from the engine.

Witness #13 heard "an abrupt decrease in engine noise," as if throttled back, and it was making a "low idle sound." He saw the airplane, with its landing gear down, approximately 200 feet above the ground. Then he observed the landing gear retract. Witness #15 said the airplane was between 200 and 300 feet above the ground, and it appeared to be gliding. He heard no engine noise. He, too, said the landing gear was up.

Witness #7 said the airplane passed directly over his house. It was "quite low, maybe two telephone poles high, about 150 feet." The engine was "sputtering and coughing," then it "quit." Witness #11 said that when the engine "quit," the airplane first climbed, then descended out of sight. Witness # 6, an airline mechanic, said the airplane was flying wings level and "very low," about 300 feet. The airplane rocked slightly, then the right wing dipped down and the airplane "made a hard right" [turn].

Witness #1, 10, and 12 observed the impact. Witness #12 heard the sound of wind and saw the airplane, right wing low, coming through the trees, barely missing a house. The right wing hit a parked semi-truck and the nose section "somersaulted" onto the top of the cab. The airplane then cartwheeled, exploded, and spun clockwise, coming to rest on its belly facing the rig. Shortly thereafter, the truck's tire blew out and the gas cap blew off the right fuel tank. A jet of flame erupted and burned a parked car and pickup truck.

Witness #1 heard a "tremendous crash" and saw the nose in the semi-truck, "maybe a 70

degree angle." The fuselage and wing were in the street. He heard one explosion as he was backing his truck up. There was a second explosion and the airplane "started to cant out towards the street and slowly went to the ground, almost rotating, resting on its belly."

The accident occurred during the hours of daylight in front of 543 S. 9th Street, at a GPS (Global Positioning System) location of 38 degrees, 28.42' north latitude, and 107 degrees, 52'02.039' west longitude. The elevation was 5,820 feet msl.

CREW INFORMATION

The pilot, age 61, held a private pilot certificate with an airplane single-engine land rating, dated October 25, 1995. He also held a third class airman medical certificate, dated June 10, 2005, with the restriction, "Must wear corrective lenses for near and distant vision." His most recent pilot logbook contained entries from February 29, 2005, to July 1, 2006. It indicated he had logged a total of 440.2 hours, of which 393.2 hours were as pilot-in-command and 6.0 hours in the Beech A36TC. According to his wife, he had owned three other airplanes, and had been flying since 1995. He was an architect, and had offices in Aspen and Telluride.

The flight instructor, age 65, held an airline transport pilot certificate, dated August 27, 2003, with an airplane multiengine land rating, type ratings in the Cessna CE-500, Hawker Siddeley HS-125, LR-Jet (Learjet), and Israel Aircraft Industries (IAI-Jet), and commercial privileges in single-engine land airplanes. He also held a flight instructor certificate, dated October 12, 2004, with airplane single/multiengine and instrument ratings, and a ground instructor certificate, dated February 27, 1998, with advanced and instrument ratings. His first class airman medical certificate, dated September 13, 2005, contained the restriction, "Must wear corrective lenses." When he made application for this medical certificate, he estimated he had logged a total of 15,873.9 hours, and 300 hours within the previous 6 months. According to the instructor's wife, he had been flying for 47 years and had recently retired.

AIRCRAFT INFORMATION

N1800Z (s/n EA-228), a model A36TC, was manufactured by the Beech Aircraft Corporation in 1981. It was powered by a Continental TSIO-520-UB6 engine (s/n 809447-R), driving a Hartzell 3-blade, all metal, constant-speed propeller (m/n PHC-C3YF-1RF). Engine TBO (time-between-overhaul) was 1,600 hours.

According to the aircraft's maintenance records recovered from the wreckage, the last annual inspection of the airframe, engine (100-hour), and propeller was on February 1, 2006, at a tachometer time of 2,937.5 hours. At that time, the engine had accrued 147.8 hours since it was factory-remanufactured on November 29, 2003. The propeller had accrued 147.8 hours since it was last overhauled on January 5, 2004, and 2,789.7 hours time-in-service. The ELT (emergency locator transmitter) battery was also replaced (expiration February 2008). The

last altimeter, encoder, transponder, and pitot-static system tests for IFR operations was made on July 4, 2004. The oxygen system was last serviced on May 19, 2005, at 2,922.0 hours time-in-service, and the weight and balance was last calculated on July 3, 2005.

METEOROLOGICAL INFORMATION

Montrose Regional Airport Automated Surface Observing System (ASOS) recorded the following weather observation at 0953: Wind, calm; visibility, 10 statute miles (or greater); sky condition, clear; temperature, 24 degrees C.; dew point, 11 degrees C.; altimeter setting, 30.31 inches of mercury; remarks: automated observation with precipitation discriminator; sea level pressure, 1017.5 mb.

AIDS TO NAVIGATION

There were no reported difficulties with aids to navigation.

COMMUNICATIONS

There were no communications difficulties.

AERODROME INFORMATION

Montrose Regional Airport is located 1 mile northwest of the city, and is situated at an elevation of 5,759 feet msl. There are two runways: 13-31 (7,500 ft. x 100 ft., asphalt, grooved) and 17-35 (10,000 ft. x 150 ft., asphalt, grooved). N1800Z was using runway 31 at the time of the accident.

Garfield County Regional Airport is situated at an elevation of 5,544 feet msl.

WRECKAGE AND IMPACT INFORMATION

The airplane and semi truck were totally consumed by fire. Based on witness accounts and scene documentation, the airplane struck the semi truck in the sleeper area. The engine and propeller assembly remained on top of the truck, and the airplane fell to the street. Two of the three propeller blades were relatively straight; the third blade was bent aft. The fuel selector was positioned on the left fuel tank.

MEDICAL AND PATHOLOGICAL INFORMATION

Autopsies were performed on the two pilots at the Montrose Community Hospital. According to the autopsy reports, both deaths were attributed to "multi-system trauma with 100 percent total body burn," and the manner of death was listed as "accidental." The pilot had "21 percent monoxide, and soot and carbon material within tracheobronchial tree." The flight instructor had a "carbon monoxide level of 7 percent, with soot in tracheobronchial tree of left lung."

FAA's Civil Aeromedical Institute (CAMI) in Oklahoma City, Oklahoma, performed toxicological screens. According to CAMI's reports, the pilot's blood contained no carbon monoxide, cyanide, ethanol, or drugs. The flight instructor's blood contained no carbon monoxide or cyanide, and his urine contained no ethanol. The only drug detected in his blood and urine was sildenafil (Viagra) and desmethylsildenafil (its metabolite).

TESTS AND RESEARCH

On July 6, 2006, the engine was disassembled and examined at Beegles Aircraft Service, Greeley, Colorado. No anomalies were noted.

The fuel selector valve was positioned on the left tank. Movement of the valve to various positions disclosed continuity throughout.

N1800Z was equipped with standard fuel tanks. According to the Beech A36 "Pilot's Operating Handbook," each wing tank holds 40 gallons of fuel, of which 37 gallons are useable. A visual measuring tab is attached to each filler neck on each individual fuel cell. The bottom of the tab and the detent slot indicates 27 and 32 gallons of useable fuel in the cell, respectively. According to the Rifle Airport line serviceman, when he visually checked the airplane's fuel tanks prior to takeoff they were "half full." If accurate, the airplane had 18.5 gallons aboard at takeoff from RIL.

Performance charts indicate each takeoff and climbout would consume approximately 3.5 gallons of fuel (10.5 gallons). The airplane departed Rifle and made two takeoffs and landings at MTJ prior to the loss of power. The airplane had been aloft for approximately 1.25 hours. Cruise performance charts for 10,000 feet (+20 degrees C. ISA) vary between 9.5 and 14.0 gph (gallons per hour), depending on leaning technique.

ADDITIONAL INFORMATION

In addition to the Federal Aviation Administration, parties to the investigation included the Raytheon Aircraft Corporation (formerly Beech Aircraft Corporation) and Teledyne Continental Motors.

The wreckage was released to the insurance company on July 20, 2006.

Pilot Information

Certificate:	Private	**Age:**	61,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	June 1, 2005
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	July 1, 2006
Flight Time:	440 hours (Total, all aircraft), 6 hours (Total, this make and model), 392 hours (Pilot In Command, all aircraft), 20 hours (Last 90 days, all aircraft), 11 hours (Last 30 days, all aircraft)		

Flight instructor Information

Certificate:	Airline transport; Commercial; Flight instructor	**Age:**	65,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Rear
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	Yes
Medical Certification:	Class 1 With waivers/limitations	**Last FAA Medical Exam:**	September 1, 2005
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	15874 hours (Total, all aircraft), 150 hours (Last 90 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N1800Z
Model/Series:	A36TC	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	EA-228
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:		**Certified Max Gross Wt.:**	3650 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Continental
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	TSIO-520-UB
Registered Owner:	David F. Gibson	**Rated Power:**	300 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	MTJ,5759 ft msl	**Distance from Accident Site:**	
Observation Time:	09:53 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	0°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.3 inches Hg	**Temperature/Dew Point:**	24°C / 11°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Rifle, CO (RIL)	**Type of Flight Plan Filed:**	None
Destination:	Montrose, CO (MTJ)	**Type of Clearance:**	Unknown
Departure Time:	08:30 Local	**Type of Airspace:**	

Airport Information

Airport:	Montrose Regional MTJ	**Runway Surface Type:**	Asphalt
Airport Elevation:	5759 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	31	**IFR Approach:**	Unknown
Runway Length/Width:	7500 ft / 100 ft	**VFR Approach/Landing:**	Full stop;Traffic pattern

Wreckage and Impact Information

Crew Injuries:	2 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	On-ground
Total Injuries:	2 Fatal	**Latitude, Longitude:**	38.467224,-107.866668

Administrative Information

Investigator In Charge (IIC):	Scott, Arnold
Additional Participating Persons:	Tom W Gierhart; FAA Flight Standards District Office; Salt Lake City, UT Timothy D Rainey; Raytheon Aircraft Corporation; Wichita, KS Andrew Swick; Teledyne Continental Motors; Mobile, AL
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Investigation Class:	Class
Note:	
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