Aviation Investigation Final Report

Location:	WEST MIFFLIN, Pennsylvania	**Accident Number:**	IAD02LA079
Date & Time:	July 31, 2002, 20:45 Local	**Registration:**	N3869Z
Aircraft:	Beech A-36	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation		

Analysis

The pilot reported that immediately after takeoff, he lost the use of the radios and other electrical equipment. The red landing gear position light remained dimly illuminated, which indicated that the landing gear was neither securely stowed or in the down and locked position. The red alternator-out warning light was also illuminated, and the ammeter registered a discharge. The pilot contacted a 911 dispatcher on his cell phone, reported his landing intentions and proceeded toward the airport. He attempted to manually extend the landing gear with the emergency landing gear extension hand crank located behind his seat, but was unable to engage the hand crank handle. Once at the airport, the pilot flew by the control tower and a controller confirmed that the landing gear were not fully extended. The pilot then flew several traffic pattern circuits before landing on a grassy area next to a runway. Upon touchdown, the airplane continued on a straight path until it collided with a runway marker, veered left, and stopped. Examination of the alternator revealed an open rotor circuit between the F1 and F2 terminals. In addition, alternator disassembly revealed an open rotor between the rotor and slip rings. According to the airplane's pilot operating handbook, an inoperative alternator would have placed the entire electrical system operation of the airplane except engine ignition on the battery, and would have been indicated by the illumination of the ALT OUT warning light and a discharge on the ammeter.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The failure of the alternator. A factor was the pilot's inability to manually extend the landing gear.

Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: TAKEOFF

Findings
1. (C) ELECTRICAL SYSTEM,ALTERNATOR - FAILURE,TOTAL

Occurrence #2: MISCELLANEOUS/OTHER
Phase of Operation: CRUISE

Findings
2. (F) GEAR EXTENSION - NOT SUCCESSFUL - PILOT IN COMMAND

Occurrence #3: ON GROUND/WATER COLLISION WITH OBJECT
Phase of Operation: EMERGENCY LANDING

Findings
3. OBJECT - AIRPORT SIGN/MARKER

Factual Information

On July 31, 2002, at 2045 eastern daylight time, a Beech A-36, N3869Z, was substantially damaged during an emergency landing at Allegheny County Airport (AGC), West Mifflin, Pennsylvania. The certificated private pilot was not injured. No flight plan was filed for the flight that originated at Arnold Palmer Regional Airport (LBE), Latrobe, Pennsylvania, about 2010. Visual meteorological conditions prevailed for the business flight conducted under 14 CFR Part 91.

The pilot stated that immediately after takeoff, he lost use of the radios and other electrical equipment. He noted that the red landing gear position light remained dimly illuminated, which indicated that the landing gear was neither securely stowed or in the down and locked position. The red alternator-out warning light was also illuminated, and the ammeter registered a discharge.

The pilot contacted a 911 dispatcher on his cell phone, who then contacted the Allegheny County Airport Control Tower. The pilot reported his intentions of landing at Allegheny County Airport and proceeded toward it. While en route, he attempted to manually extend the landing gear with the emergency landing gear extension hand crank located at the rear of both front seats. However, he was unable to engage the hand crank handle.

Once at the airport, the pilot flew by the control tower and a controller confirmed that the landing gear were not fully extended. The pilot then flew several traffic pattern circuits before landing on the grass area next to runway 28. Upon touchdown, the airplane continued on a straight path until it collided with a runway marker, veered left, and stopped.

A witness, who flew for a major airline, was standing on the airport ramp when he saw the airplane fly overhead about 200 feet above ground level (agl). He said all three landing gear were "three-quarters" of the way extended. The witness observed the airplane make three more passes over the airport, each time with the landing gear in the same position. On the fifth pass, the airplane approached the grass area next to runway 28 and landed. As the airplane touched down, the left main landing gear collapsed and the airplane turned left. Then, the right main landing gear and nose gear collapsed. The witness said the airplane slid for a few hundred feet before it came to rest perpendicular to the runway.

Three Federal Aviation Administration (FAA) inspectors performed an examination of the airplane after the accident. According to an inspector, the fuselage was twisted. External examination of the alternator and voltage regulators revealed that all components were intact and securely installed.

According to a mechanic, during the recovery process, the airplane was raised on jacks, and

the landing gear was lowered by the manual extension system hand crank. The airplane was then towed to a hangar.

The alternator was removed and examined under FAA supervision. Examination of the alternator revealed that there was an open rotor circuit between the F1 and F2 terminals. Additionally, when the alternator was disassembled, there was an open rotor between the rotor and slip rings.

A review of aircraft maintenance records revealed that the alternator was last overhauled on April 25, 2002, and had accumulated less than 3 hours since installation.

Two voltage regulators were also removed and examined under FAA supervision. Examination of both regulators revealed no anomalies.

According to the Beechcraft Bonanza A36 Pilot Operating Handbook (POH), page 3-8, "An inoperative alternator will place the entire electrical system operation of the airplane except engine ignition on the battery. An alternator failure will be indicated by the illumination of the ALT OUT warning light, located on the instrument panel below the flight instruments."

"The warning light will not illuminate until the alternator output is almost zero. A verification of alternator malfunction would be a discharge on the ammeter."

The pilot reported a total of 1,846 flight hours, of which, 1,134 hours were in make and model.

Weather at the time of the accident included winds from 340 degrees at 5 knots, visibility 10 statute miles, scattered clouds at 5,500 feet, and broken clouds at 25,000 feet.

Pilot Information

Certificate:	Private	**Age:**	70,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:**	No
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	March 19, 2001
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	April 14, 2002
Flight Time:	1846 hours (Total, all aircraft), 1134 hours (Total, this make and model), 1337 hours (Pilot In Command, all aircraft), 26 hours (Last 90 days, all aircraft), 17 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N3869Z
Model/Series:	A-36	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	E-1788
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	July 27, 2002 Annual	**Certified Max Gross Wt.:**	3600 lbs
Time Since Last Inspection:	3.6 Hrs	**Engines:**	2 Reciprocating
Airframe Total Time:	2398 Hrs at time of accident	**Engine Manufacturer:**	Teledyne Continental
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	IO-520-BB
Registered Owner:	DANIEL M. ROONEY	**Rated Power:**	285 Horsepower
Operator:		**Operating Certificate(s) Held:**	None
Operator Does Business As:	DMR Airlines	**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Dusk
Observation Facility, Elevation:	AGC,1251 ft msl	**Distance from Accident Site:**	
Observation Time:	20:53 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Scattered / 5500 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	Broken / 25000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	340°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.97 inches Hg	**Temperature/Dew Point:**	29°C / 21°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	LATROBE, PA (LBE)	**Type of Flight Plan Filed:**	None
Destination:	WEST MIFFLIN, PA (AGC)	**Type of Clearance:**	VFR
Departure Time:	20:10 Local	**Type of Airspace:**	Class B

Airport Information

Airport:	Allegheny County AGC	**Runway Surface Type:**	Concrete
Airport Elevation:	1251 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	28	**IFR Approach:**	None
Runway Length/Width:	1500 ft / 100 ft	**VFR Approach/Landing:**	Precautionary landing

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	40.354167,-79.93

Administrative Information

Investigator In Charge (IIC):	Yeager, Leah
Additional Participating Persons:	WILLIAM KOSHAR; FAA/FSDO; ALLEGHENY, PA
Original Publish Date:	August 26, 2003
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=55351