Aviation Investigation Final Report

Location:	Clifton, Arizona	**Accident Number:**	LAX01FA049
Date & Time:	November 30, 2000, 19:44 Local	**Registration:**	N7901R
Aircraft:	Beech BE-55-D55	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	1 Fatal, 1 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The twin-engine airplane impacted a utility pole about 1,250 feet short of the runway while conducting an approach during dark night light conditions. A witness located at the airport observed the airplane make three attempts to land, and on the fourth, the airplane veered to the left and burst into flames. He added he had turned his vehicle lights on at the approach end of the runway so the pilot would be able to land. The same witness indicated he observed the runway lights prior to the accident when another aircraft landed earlier in the evening. The airport utilized a pilot control lighting system, which requires the pilot to key the communication radio mike seven times over the common traffic advisory frequency within 5 seconds to illuminate the runway edge lights on their highest intensity. The runway edge lights would then remain illuminated for a period of 15 minutes from the most recent time of activation. Another pilot, who utilized the airport on the day of the accident, reported no discrepancies with the lighting system 30 minutes prior to and following the accident. A postaccident examination of the communication radios could not determine which frequency the pilot had selected. The aircraft's altimeter face was located in the wreckage and was set so that it was reading approximately 150 feet higher than the aircraft's actual altitude. Another airport, located 22 miles from the accident site, utilized continuous runway lighting between sunset and sunrise.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

the pilot's improper in-flight decision to attempt a landing on an unlit runway at night, and his failure to maintain the proper glide path and clearance from obstacles while on final approach, which resulted in the collision with a utility pole. A contributing factor was his failure to divert to an airport with constant runway lighting.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: APPROACH - VFR PATTERN - FINAL APPROACH

Findings
1. OBJECT - POLE
2. (C) IN-FLIGHT PLANNING/DECISION - IMPROPER - PILOT IN COMMAND
3. (C) ALTITUDE/CLEARANCE - NOT MAINTAINED - PILOT IN COMMAND
4. (C) PROPER GLIDEPATH - NOT MAINTAINED - PILOT IN COMMAND
5. (F) FLIGHT TO ALTERNATE DESTINATION - NOT PERFORMED - PILOT IN COMMAND

Factual Information

HISTORY OF FLIGHT

On November 30, 2000, at 1944 mountain standard time, a Beech D55 twin-engine airplane, N7901R, was destroyed by a post impact fire after it collided with a utility pole while on final approach to the Greenlee County Airport, Clifton, Arizona. The airplane was registered to, and operated by the pilot under the provisions of 14 CFR Part 91 as a personal flight. The commercial pilot sustained fatal injuries and his pilot-rated passenger received serious injuries. Night visual meteorological conditions prevailed at the time of the accident, and a flight plan had not been filed. The cross-country flight departed the Show Low Municipal Airport, Show Low, Arizona, about 1845.

A deputy sheriff from the Greenlee County Sheriff's Department interviewed a witness to the accident. The witness reported that he was at the airport to pickup the pilot and passenger for an Amway meeting in Clifton. The airplane made three attempts to land on runway 7. On the fourth attempt he saw the airplane veer to the left and burst into flames. He further stated that he had turned his vehicle lights on at the approach end of the runway so the pilot would be able to land.

According to a supervisor at the Duncan Valley Electric Company, a power outage was noted at 1944. At 1949, the Greenlee County Sheriff's Department received a 911 emergency call indicating there had been an airplane accident at the Greenlee County Airport. The wreckage was located west of the airport, and east of a broken utility pole.

PERSONNEL INFORMATION

The pilot held a commercial certificate with an airplane single engine, multiengine, and instrument ratings. He also held a flight instructor rating for single engine, multiengine, and instrument airplanes. He was issued a second-class medical certificate on September 16, 1999, with a limitation that he "must wear corrective lenses for near and distant vision."

According to the pilot's last medical application, he had accumulated a total of 8,150 flight hours. According to a family representative, the pilot had accumulated a total of 7,935 hours in the same make and model as the accident airplane.

AIRCRAFT INFORMATION

The aircraft's maintenance records were not located during the course of the investigation and were believed to be in the aircraft at the time of the accident, and destroyed by the post-impact fire.

AIRPORT INFORMATION

The Greenlee County Airport elevation is 3,811 feet. It utilizes one runway 7/25, which is edged with medium intensity runway lighting (MIRL). The MIRL is operated by pilot-controlled-lighting (PCL).

The Aeronautical Information Manual (AIM) describes the use of PCL and its recommended operation. According to the AIM, the lighting control system consists of a 3-step control responsive to 7, 5, and/or three communication radio microphone clicks. This 3-step control will turn on lighting facilities capable of either 3-step, 2-step, or 1-step operation. The 3-step and 2-step lighting facilities can be altered in intensity, while the 1-step cannot. All lighting is illuminated for a period of 15 minutes from the most recent time of activation and may not be extinguished prior to end of the 15-minute period.

The AIM suggested use of PCL is to always initially key the radio mike seven times, which will assure that all controlled lights are turned on to the maximum available intensity. If desired, adjustment can then be made, where the capability is provided, to a lower intensity, by keying the mike five and/or three times. Due to the close proximity of airports using the same frequency, radio controlled lighting receivers may be set at a low sensitivity requiring the aircraft to be relatively close to activate the system. Consequently, even when lights are on, pilots are recommended to always key the radio mike as directed when overflying an airport of intended landing or just prior to entering the final segment of an approach. This will assure the aircraft is close enough to activate the system and a full 15 minutes lighting duration is available. The PCL systems may be activated by keying the radio mike (within 5 seconds) seven times for the highest intensity available, five times for medium or low intensity, or three times for lowest intensity available.

The Airport/Facility Directory (AFD) indicates the Greenlee County Airports runway lighting system could be activated using the common traffic advisory frequency (CTAF) of 122.9.

According to another pilot, he activated the airport's pilot controlled runway lighting two times on the day of the accident. The first time was approximately 30 minutes prior to the accident as he landed at the airport, and the second time was approximately 30 minutes after the accident as he departed. He reported that the lights worked with no discrepancies noted.

According to a flight department that operates into the Greenlee County Airport, their pilots have had problems getting the PCL system to operate. According to a Greenlee Country engineer, the MIRL was installed approximately 2 years prior to the accident. No problems utilizing the lighting system had been brought to his attention within the last 2 years. The engineer and airport caretaker operated the MIRL the day after the accident, with no discrepancies noted.

According to the witness who was waiting for the pilot and passenger, he noted another

airplane had either landed or taken off prior to the arrival of the accident airplane and the runway lights were working.

Runway 7 was 4,970 feet long and 75 feet wide and had a 1.50 percent upslope. The impacted power pole was approximately 30 feet tall and was on a 250-degree magnetic bearing from the approach end of the runway. The pole sat on the edge of a cliff that drops off into a ravine on the southwest side where the Gila River flows. The approach end of the runway rises from the ravine situated to the west of the runway and the airport sits atop a plateau. The Safety Board investigator-in-charge stood at the approach end of runway 7 and observed that the top of the power pole was situated below the runway's approach end elevation.

There was no visual glideslope aid, such as a Precision Approach Path Indicator (PAPI) or Visual Approach Slope Indicator (VASI), available at the airport.

METEOROLOGICAL INFORMATION

The U.S. Naval Observatory Astronomical Applications Department recorded the following sun and moon data for Clifton (Greenlee County) on the day of the accident:

Sunset	1710
End of Civil Twilight	1737
Moonrise	1054
Moonset	2118

The phase of the moon on the evening of the accident was waxing crescent with 20 percent of the moon's visible disk illuminated.

At 1950, the weather observation facility at the Safford Regional Airport (located 22 nautical miles west-southwest of the accident site) reported the wind as calm; visibility 10 statute miles; clear sky; temperature 9 degrees Celsius; dew point 2 degrees Celsius; and an altimeter setting of 30.10 inches of mercury.

WRECKAGE AND IMPACT INFORMATION

The main wreckage was located on the west side of the airport, approximately 600 feet from the approach end of runway 7 in a flat rocky area with dry grass typical of the Arizona desert. Global Positioning System (GPS) coordinates obtained at the main wreckage area were 32 degrees 57 minutes 39 seconds north latitude and 109 degrees 13 minutes 32 seconds west longitude. The airplane came to rest oriented along a 350-degree magnetic heading. The damaged utility pole was situated approximately 1,250 feet from the approach end of the runway.

The utility pole was fragmented into three sections: the bottom section, which remained secured to the ground, was approximately 10 feet in length; the middle section, which was

approximately 12 feet long; and the 15-foot top section, which included the T-shaped wire support and wires. The outboard wing section was found approximately 100 feet from the base of the utility pole. The left aileron was found approximately 50 feet past the left outboard wing section. A semicircular indentation was observed on the left outboard wing leading edge approximately 6 feet inboard from the tip. The diameter of the indentation corresponded to that of the damaged utility pole. A color transfer was noted on the base of the utility pole's top fractured section, which matched the color of the left wing.

A 140-foot ground scar was observed approximately 400 feet from the utility pole. Oil soaked soil was noted within the ground scar. The right propeller and engine were found approximately 530 and 560 feet, respectively from the utility pole. The wreckage was then located approximately 600 feet from the pole followed by the left engine and propeller.

The fuselage was burned in its entirety and the right wing remained adjacent to the fuselage and was connected via control cables. The left wing was fragmented throughout the wreckage path and the main wreckage area. The right main landing gear was found down and locked at the accident site. The flaps appeared to be in the landing configuration. Flight control continuity was confirmed from the cockpit area to the elevator, rudder, and right aileron. The elevator was found in the full up position and was impinged by the full right deflection of the rudder.

The cockpit instrument panel was destroyed. The altimeter face-plate was located among the wreckage and the Kollsman window was found adjusted to 30.25 inches of mercury. The altitude indications were almost completely burned off of the instrument face; however, the hundred-foot pointer was near the 400-foot mark.

The left engine was located with its propeller still attached and all three propeller blades displayed twisting, leading edge gouging, and chord wise scoring. Thumb compression was obtained on all six cylinders and continuity was confirmed from the propeller flange to the accessory section. The spark plugs displayed coloration consistent with normal combustion when compared with the Champion Spark Plugs "Check-A-Plug" Chart (AV-27). There was no evidence of preimpact anomalies with the left engine and propeller that would have affected their operation.

The right propeller was separated from the right engine at the mounting flange. All three blades were twisted and displayed leading edge gouging and chordwise scoring. Thumb compression was obtained on all six cylinders and continuity was confirmed from the propeller flange to the accessory section. The spark plugs on the right engine also displayed normal combustion coloration. There was no evidence of preimpact anomalies with the right engine and propeller that would have affected their operation.

TESTS AND RESEARCH

The communication radios were removed from the wreckage in an attempt to determine the

selected frequency. The units were examined at Westwind Avionics, Phoenix, Arizona. Conclusive information from the charred radio remains was unattainable.

PATHOLOGICAL INFORMATION

An autopsy was conducted on the pilot at the Pima County Medical Examiner's Office. According to the forensic pathologist, who conducted the autopsy, the pilot died as a result of thermal injuries. Blunt and sharp force injuries to the pilot's head and torso along with arteriosclerotic heart disease were listed as contributory to the pilot's death.

Toxicological tests on the pilot for carbon monoxide, cyanide, ethanol, and drugs were positive for the following items:

0.199 ug/ml of morphine detected in the pilot's blood,
an unquantified amount of morphine detected in the pilot's urine,
0.53 ug/ml of lidocaine detected in the pilot's blood,
2.4 ug/ml of lidocaine detected in the pilot's urine.

It should be noted the pilot sustained significant burn and impact injuries and drugs were administered to the pilot when he was transported to the hospital.

ADDITIONAL INFORMATION

According to the Air Force Physiological Training Pamphlet AFP-160-5, runway slope and terrain around the runway approach can induce visual illusions. Runways that have some degree of slope "provide tricky visual cues to the pilot. For the upslope runway, the pilot may feel he is at a greater height above the terrain, causing a normal glide path to seem too steep. Establishing a compensatory glide path that seems more normal could result in an approach and landing short of the runway."

The Safford Regional Airport had continuous runway lighting between sunset and sunrise. The Safford Regional Airport is located 22 nautical miles west-southwest of the Greenlee County Airport.

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	70,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:**	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	September 16, 1999
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	December 31, 1999
Flight Time:	8150 hours (Total, all aircraft), 7935 hours (Total, this make and model)		

Co-pilot Information

Certificate:	Private	**Age:**	38,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Expired	**Last FAA Medical Exam:**	December 31, 1980
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	February 28, 1998
Flight Time:	185 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N7901R
Model/Series:	BE-55-D55 D55	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	TE-744
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	Unknown	**Certified Max Gross Wt.:**	5300 lbs
Time Since Last Inspection:		**Engines:**	2 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Continental
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	IO-520-C
Registered Owner:	Robert G. Terrel	**Rated Power:**	285 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Night
Observation Facility, Elevation:	SAD,3811 ft msl	**Distance from Accident Site:**	22 Nautical Miles
Observation Time:	19:50 Local	**Direction from Accident Site:**	257°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.1 inches Hg	**Temperature/Dew Point:**	12°C / 3°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Show Low, AZ (SOW)	**Type of Flight Plan Filed:**	None
Destination:	(CFT)	**Type of Clearance:**	None
Departure Time:	18:45 Local	**Type of Airspace:**	Class E

Airport Information

Airport:	Greenlee County CFT	**Runway Surface Type:**	Asphalt
Airport Elevation:	3811 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	7	**IFR Approach:**	None
Runway Length/Width:	4970 ft / 75 ft	**VFR Approach/Landing:**	Full stop;Traffic pattern

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Serious	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	On-ground
Total Injuries:	1 Fatal, 1 Serious	**Latitude, Longitude:**	32.960834,-109.225555

Administrative Information

Investigator In Charge (IIC):	Cornejo, Tealeye
Additional Participating Persons:	Joe Poisella; Federal Aviation Administration; Scottsdale, AZ R S Boyle; Teledyne Continental Motors; Arvada, CO Eddie Webber; Raytheon Aircraft Corp.; Wichita, KS
Original Publish Date:	November 25, 2003
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=50712