Aviation Investigation Final Report

Location:	Riverside, California	**Accident Number:**	WPR15FA222
Date & Time:	July 26, 2015, 17:04 Local	**Registration:**	N988RH
Aircraft:	Beech F35	**Aircraft Damage:**	Destroyed
Defining Event:	Loss of engine power (total)	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The private pilot was receiving vectors for an instrument landing system approach during daytime visual flight rules conditions when he advised the controller that the engine had lost power and that he needed to land at a nearby airport located northeast of his position. The controller responded with the distance and direction from the airport and asked the pilot if he had the airport in sight, which he acknowledged. The controller advised the pilot to proceed inbound to the airport, told him that he could land on the runway of his discretion, and asked him to tell him which runway he was going to use; however, the pilot only responded that he was going to land into the wind. The controller repeated that the runway was at his discretion and the pilot repeated that he was going to land into the wind. Shortly after, the controller provided the pilot with the current weather conditions at the airport, which included wind from 280° at 12 knots gusting to 18 knots, and he then cleared the pilot to land on runway 27. Subsequently, the pilot responded that he was not going to make it to the airport. No further radio communications were received from the pilot.

Review of recorded radar data revealed that, when the pilot initially reported the loss of engine power, the airplane was about 1,644 ft above ground level; traveling on a heading of about 094°; and about 1.65 nautical miles (nm) west-southwest from the approach end of runway 34, 1.74 nm southwest of the approach end of runway 9, and 2.3 miles southwest of the approach end of runway 27. The radar data showed the flight track of the airplane continued on an easterly heading until it was about 0.96 nm south of runway 27 and about 653 ft above ground level. The airplane then turned left to a northerly heading while continuing to descend until radar contact was lost.

Postaccident examination of the airplane revealed that the landing gear were in the extended position and that the wing flaps were extended to about 20°. A postimpact fire and impact damage precluded a determination of the fuel quantities in all three fuel tanks. The engine test run did not reveal evidence of any preexisting anomalies that would have precluded normal operation. The reason for the loss of engine power could not be determined.

The Pilot's Operating Handbook for the accident airplane states that the maximum glide configuration

includes landing gear and flaps up, cowl flaps closed, propeller low rpm, with an airspeed of 105 knots. With this configuration, the glide distance is about 1.7 nm per 1,000 ft of altitude above the terrain. It is likely that, if the airplane had been properly configured for a maximum glide distance and if the pilot decided to turn directly toward runway 34 or runway 9, for a downwind or crosswind landing, the airplane would have been able to reach either of those runways.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The total loss of engine power for reasons that could not be determined during postaccident examination of the airplane and engine. Also causal to the accident was the pilot's decision to attempt to reach the farthest runway and land into the wind instead of conducting a crosswind or downwind landing at a closer runway following the loss of engine power.

Findings

Not determined	(general) - Unknown/Not determined
Personnel issues	Decision making/judgment - Pilot

Factual Information

History of Flight

Maneuvering	Loss of engine power (total) (Defining event)
Maneuvering	Off-field or emergency landing
Maneuvering	Collision with terr/obj (non-CFIT)

On July 26, 2015, about 1704 Pacific daylight time, a Beech F35, N988RH, was destroyed when it impacted a power pole and terrain during a forced landing following a loss of engine power near Riverside Municipal Airport (RAL), Riverside, California. The private pilot, the sole occupant, was fatally injured. The airplane sustained substantial damage. The airplane was registered to and operated by the pilot as a 14 Code of Federal Regulations Part 91 personal flight. Visual meteorological conditions were reported at the airport about the time of the accident, and no flight plan was filed. The local flight originated from Brackett Field Airport, La Verne, California, about 1619.

Review of air traffic control (ATC) audio recordings and transcripts provided by the Federal Aviation Administration (FAA) revealed that a Southern California Terminal Radar Approach Control (SoCal TRACON) controller was providing the pilot vectors for the instrument landing system 26R instrument approach at the Chino Municipal Airport, Chino, California. The SoCal TRACON controller issued the pilot a heading change from 070° to 350°. Shortly after, the pilot responded that he had lost engine power and needed to land at RAL. The controller responded with the distance and direction to RAL and asked the pilot if he had the airport in sight, which the pilot acknowledged. The controller advised the pilot to proceed inbound to RAL, told him that he could land on the runway of his discretion, and asked him to tell him which runway he was going to use. The pilot responded that he was going to land into the wind, and the controller repeated that the runway was at his discretion and asked how many people were on board. The pilot responded that he was the only person onboard and repeated that he was going to land into the wind.

Shortly after, the controller relayed the current weather conditions at RAL, which included wind from 280° at 12 knots gusting to 18 knots, and cleared the pilot to land on runway 27. Subsequently, the pilot responded that he was "not going to make it." No further radio communications were received from the pilot.

Pilot Information

Certificate:	Private	**Age:**	52,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Unknown
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 1 With waivers/limitations	**Last FAA Medical Exam:**	
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	415 hours (Total, all aircraft)		

The pilot, age 52, held a private pilot certificate with an airplane single-engine land rating, which was issued February 2, 2013. He was issued a first-class airman medical certificate on April 1, 2014, with the limitation that he "must have available glasses for near vision."

Review of the pilot's personal logbook revealed that, as of the most recent entry, dated June 19, 2015, he had accumulated a total flight time of 443.9 hours.

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N988RH
Model/Series:	F35 NO SERIES	**Aircraft Category:**	Airplane
Year of Manufacture:	1955	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	D-4131
Landing Gear Type:	Retractable - Tricycle	**Seats:**	
Date/Type of Last Inspection:	October 14, 2014 100 hour	**Certified Max Gross Wt.:**	2754 lbs
Time Since Last Inspection:	1497 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	609.4 Hrs as of last inspection	**Engine Manufacturer:**	Continental Motors
ELT:	Installed, not activated	**Engine Model/Series:**	E225-8
Registered Owner:		**Rated Power:**	225
Operator:	On file	**Operating Certificate(s) Held:**	None

The four-seat, low-wing, retractable-gear airplane, serial number D-4131, was manufactured in 1955. It was powered by a 225-horsepower Continental Motors E225-8 engine, serial number 30406-D-4-8. The airplane was equipped with a Hartzell model HC-A2V20-4A1, 2-bladed, constant-speed propeller, serial number AK1334.

Review of the airframe and engine maintenance logbook records revealed that the most recent annual and 100-hour inspections were completed on October 5, 2014, at a tachometer time of 609.40 hours and

total time since major overhaul of 606.4 hours. The engine was overhauled on April 5, 1999, at a total engine time of 4,428.6 hours and subsequently installed on the airframe on May 12, 1999, at a tachometer time of 3 hours. The most recent maintenance performed on the engine was the replacement of a carburetor valve door assembly, alternate air door spring, and induction filter on May 29, 2015, at a tachometer time of 729.9 hours.

The pilot operating handbook for the F35, section III, Emergency Procedures, page 3-6 states in part:

"MAXIMUM GLIDE CONFIGURATION
Landing Gear – UP
Flaps – UP
Cowl Flaps – CLOSED
Propeller – LO RPM
Airspeed – 105 Knots/121 MPH

Glide distance is approximately 1.7 nautical miles (2 statute miles) per 1,000 feet of altitude above terrain."

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KRAL,804 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	23:53 Local	**Direction from Accident Site:**	329°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	12 knots / 19 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	290°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.87 inches Hg	**Temperature/Dew Point:**	30°C / 16°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	LA VERNE, CA (POC)	**Type of Flight Plan Filed:**	None
Destination:	Riverside, CA (RAL)	**Type of Clearance:**	VFR;VFR flight following
Departure Time:	16:19 Local	**Type of Airspace:**	

At 1653, the RAL automated weather observation station, located about 0.50 mile north of the accident site, reported wind from 290° at 12 knots, gusts to 19 knots, visibility 10 statute miles, clear sky, temperature 30° C, dew point 16° C, and an altimeter setting of 29.87 inches of Mercury.

Airport Information

Airport:	RIVERSIDE MUNI RAL	**Runway Surface Type:**	Asphalt
Airport Elevation:	819 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	27	**IFR Approach:**	None
Runway Length/Width:	5401 ft / 100 ft	**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	33.944442,-117.433609

Examination of the accident site revealed that the airplane struck a power pole and power lines about 0.50 mile south of the approach end of runway 27. The first identified point of impact was a power pole, which exhibited a downed wire and impact marks about 40 ft above ground level. Portions of the right flap and ruddervator were located immediately adjacent to the power pole. The right wing was located about 40 ft beyond the power pole in the middle of a residential street. The main wreckage, which consisted of the fuselage, left wing, engine, and left ruddervator, was located about 89 ft from the power pole. The wreckage debris path was oriented on a magnetic heading of about 045°.

Examination of the airframe revealed that the right wing was separated outboard of the right main landing gear. The wing exhibited fire damage to both separated areas. The aileron remained attached via all its mounts. The right flap was separated into two sections, which were located near the first identified point of impact. The right main landing gear was observed in the extended position. The right main fuel tank was mostly intact. The fuel line fitting at the root of the fuel tank was separated. About 6 gallons of 100-low-lead fuel was drained from the fuel tank. The right auxiliary tank was consumed by fire.

The left wing remained attached to the fuselage and exhibited fire damage throughout. The inboard portion of the wing from the flap aileron junction was mostly consumed by fire. The outboard portion of the left flap remained attached to the wing; however, the inboard portion was consumed by fire. Both the left main and auxiliary fuel tanks were consumed by fire. The aileron remained attached via all of its mounts and exhibited fire damage. The left main landing gear was observed in the extended position.

The flap actuator was measured and was found to be in a position consistent with 20° flaps.

The fuselage came to rest inverted and exhibited extensive fire damage. A majority of the bottom of the fuselage forward of the baggage compartment was consumed by fire. Oil residue was observed on the aft area of the fuselage structure. The instrument panel was consumed by fire and exhibited multiple instrument displacement. The radio panel was fire damaged. The throttle, mixture, and propeller controls were found in the full-forward position and were fire damaged. The fuel selector valve was heavily fire

damaged. The fuel screen was free of debris, and the selector valve was found in a position consistent with the auxiliary position.

The empennage was mostly intact. The right ruddervator was separated and severed into two pieces. A circular impact mark, consistent with the size of the power pole, was observed and extended to the spar.

Both propeller blades remained attached to the propeller hub. One propeller blade was bent aft about 90° midspan. The opposing propeller blade was bent aft slightly midspan and exhibited a slight forward bend about 5 inches inboard from the blade tip.

The engine remained attached to the engine mount via all its mounts. All of the engine accessories remained attached to the engine. The propeller remained attached to the crankshaft. The propeller was moved by hand and rotated about 1/2 inch. Throttle, mixture, and propeller control continuity was established from the cockpit to the engine. The throttle and mixture control cables were separated from their respective control arms, consistent with impact damage. The engine was removed from the airframe and was shipped to the Continental Motors Inc., facility for further examination.
The engine was examined on November 16 and 17, 2015. To facilitate an engine run, the propeller governor was removed, and a blanking plate was installed. The oil sump was impact damaged with multiple holes noted. The oil cooler exhibited impact marks, consistent with striking the left magneto. Engine-to-magneto timing was 30° for the right magneto and 19° for the left magneto. Scrape marks were observed on the mounting flange of the left magneto, consistent with impact from the oil cooler. The left magneto was adjusted to an area where the scrape marks originated, and timing was verified at 25°. A test propeller was installed along with various fuel lines and control cables to facilitate an engine test run. The engine was installed on an engine test stand and run at various power settings uneventfully until being shut off using the mixture.

Medical and Pathological Information

The Riverside County Coroner conducted an autopsy on the pilot. The medical examiner determined that the cause of death was "massive blunt force injuries to torso."

The FAA Civil Aerospace Medical Institute (CAMI) performed toxicology tests on specimens from the pilot. According to CAMI's report, the results were negative for carbon monoxide, volatiles, and all screened drugs.

Tests and Research

Review of FAA radar data and ATC transcripts revealed that, when the pilot initially reported the loss of engine power, the airplane was about 2,425 ft mean sea level (msl), or about 1,644 ft above ground level (agl); traveling on a heading of about 094°; and about 1.65 nm west southwest from the approach end of runway 34 at RAL, 1.74 nm southwest of the approach end of runway 9, and 2.3 nm from the approach end of runway 27. The radar data depicted the flight track of the airplane continuing on an easterly heading until it was about 0.96 nm south of runway 27 at an altitude of about 1,400 ft msl or about 653

ft agl. The airplane then turned left to a northerly heading while continuing to descend. The last radar target was located about 0.1 nm west of the accident site at an altitude of 775 ft msl.

Administrative Information

Investigator In Charge (IIC):	Cawthra, Joshua
Additional Participating Persons:	Roy R Peters; Federal Aviation Administration; Riverside, CA Jan Smith; Textron Aviation; Wichita, KS Nicole Charnon; Continental Motors Inc; Mobile, AL
Original Publish Date:	April 4, 2017
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=91633