



Aviation Investigation Final Report

Location:	Coalinga, California	Accident Number:	WPR09LA050
Date & Time:	November 30, 2008, 20:26 Local	Registration:	N3058Y
Aircraft:	Beech A36	Aircraft Damage:	Substantial
Defining Event:	Loss of engine power (total)	Injuries:	1 Fatal, 2 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that after an uneventful night cross-country flight, he established visual contact with the area of his intended destination and started a descent towards the airport. The pilot stated that due to a layer of fog over the airport, he diverted to an alternate airport equipped with an instrument approach and initiated a climbing left turn. Shortly after, the engine lost power and the pilot altered his course to the nearest airport, and conducted his emergency checklist. Despite numerous attempts, the engine would not restart. The pilot further stated that upon realizing he would not be able to make the airport, he set up for an off-field landing with the flaps and landing gear retracted. During the emergency descent, visibility was limited due to a layer of fog. Subsequently, the airplane landed hard in an open field and came to rest upright. First responders reported that thick fog in the area at the time of the accident hampered the search and rescue operation while locating the downed airplane. The engine was removed from the airframe and installed on a test stand. The engine was started and ran smoothly at an idle speed before the engine was shut down using the mixture control cutoff. No preexisting mechanical anomalies were noted with examination of the recovered airframe and engine that would have precluded normal operation.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The loss of engine power while in climb to cruise flight for undetermined reasons.

Findings

Not determined	(general) - Unknown/Not determined
Aircraft	(general) - Failure
Environmental issues	Dark - Effect on operation
Environmental issues	Fog - Effect on operation

Factual Information

History of Flight

Enroute-climb to cruise	Loss of engine power (total) (Defining event)
Landing	Off-field or emergency landing

HISTORY OF FLIGHT

On November 30, 2008, about 2026 Pacific standard time, a Beech A36 single-engine airplane, N3058Y, was substantially damaged during a forced landing following a loss of engine power near the New Coalinga Municipal Airport (C80), Coalinga, California. The airplane was registered to Sofiair Inc. of Long Beach, California, and operated by the pilot under the provisions of Title 14 Code of Federal Regulations Part 91. The private pilot and one of his two passengers sustained minor injuries, and one passenger was killed. Instrument meteorological conditions (IMC) prevailed and an instrument flight rules (IFR) flight plan was filed for the personal flight. The cross-country flight originated from the Long Beach Airport (LGB), Long Beach, California, at 1852 with an intended destination of Harris Ranch Airport (308), Coalinga, California.

In a written statement, the pilot reported that prior to departure; he conducted a pre-flight inspection of the airplane. During the inspection, he noted the left fuel tank was full of fuel and the right fuel tank level was just above the slot on the fuel tank tab. The pilot and passengers boarded the airplane, and the pilot proceeded to obtain his IFR clearance. Prior to starting the engine, the pilot placed the fuel selector valve handle in the "left" position. The pilot then taxied to Runway 25L and conducted an engine run up using his pre takeoff checklist. He added that when verifying the "fuel on fullest tank" checklist item, he noted the left fuel gauge indicated three quarters to seven eighths of a tank and the right fuel gauge indicated full. He then switched the fuel selector handle to the "right" position prior to takeoff.

The pilot stated that after departure he was cleared to 10,000 feet mean sea level (msl). Upon leveling off at 10,000 feet, he switched to the left fuel tank, and leaned the mixture using the exhaust gas temperature gauge, along with the engine analyzer to 16 gallons per hour (GPH). About 20-30 minutes later, the pilot noticed the left fuel gauge indicated 2/3 of a tank and the right fuel gauge indicated almost full. He decided to switch to the right fuel tank to "even the load before landing."

Following an uneventful flight, the pilot was cleared from 10,000 feet to 4,000 feet msl. Upon descending to 4,000 feet, the pilot established visual contact with the lights from the Harris Ranch complex and canceled his IFR flight following with the Oakland Air Route Traffic Control Center (ATRCC) while continuing to descend. At an altitude of about 3,000 feet msl, he observed a fog layer over the airport and decided to divert to an airport equipped with an

instrument approach near Santa Barbara. The pilot initiated a climbing left turn and contacted Oakland ARTCC, announcing his intentions of diverting to Santa Barbara. As he requested an IFR clearance, the pilot adjusted the mixture lever to the full forward position. The pilot stated that while waiting to obtain his IFR clearance, approximately a minute later, the engine lost power.

The pilot performed a series of emergency procedures, including switching fuel tanks, turning the fuel boost pump to high, and adjusting the mixture and throttle control levers. Upon completing the emergency procedures, the engine produced a "short millisecond burst of power, then nothing more." Despite numerous attempts, the engine did not restart and the pilot declared an emergency while diverting to C80.

The pilot further reported that as the airplane descended through 1,000 feet msl, he was in IMC conditions within a fog layer; with the landing gear and flaps in the retracted position. The pilot realized that he was not going to be able to reach the airport and slowed the airplane to about 90 to 100 knots, keeping the wings level "to await the impact." Subsequently, the airplane landed hard in an open field and came to rest upright.

The pilot added that after exiting the airplane, he noticed a "pool of clear liquid" between the leading edge of the right wing and engine. The pilot initially turned off the airplane's master switch. A few minutes later, the pilot turned the master switch on in an effort to provide first responders with the GPS coordinates of their location and turned the master switch to the off position. Following further conversation with first responders, the pilot turned the master switch back on along with the airplane's lights to assist the first responders in locating the airplane. The pilot stated that about 30 minutes later, he observed fuel leaking from the right wing/engine area again, and turned the master switch off. A few minutes later, the pilot "decided to turn it [the master switch] back on. Later again, I [the pilot] got scared after seeing fuel once more, and turned it [the master switch] back off."

In a subsequent interview with the pilot, he stated that he was unsure if the liquid between the engine and right wing was fuel and mentioned that he did not have the best sense of smell. He recalled turning the electric fuel boost pump on but did not recall when or if he turned it to the off position.

According to first responders, thick fog in the area at the time of the accident hampered the search for the downed aircraft. About an hour after the notification of the accident, first responders located the airplane wreckage.

PERSONNEL INFORMATION

The 56 year old pilot held a private pilot certificate with airplane single-engine land and instrument airplane ratings. A third-class airman medical certificate was issued on August 21, 2008, with the limitations stated "must wear corrective lenses." The pilot reported that at the time of the accident he had accumulated 2,259 hours of total flight time; 251 hours were in the

accident make/model airplane, 23 hours within the previous 90 days, and 3 hours within the previous 30 days.

AIRCRAFT INFORMATION

The six-seat, low-wing, retractable-gear airplane, serial number (S/N) E-2366, was manufactured in 1987. It was powered by a Teledyne Continental Motors IO-550-B engine, serial number 675321, rated at 300-horse power and equipped with a three bladed McCauley variable-pitch propeller. Review of copies of maintenance logbook records showed an annual inspection was completed March 19, 2008, at a recorded maintenance HOBBS time of 1,407.1 hours, airframe total time of 2,410.2 hours, and engine time since major overhaul of 536.7 hours.

The rental company representative reported that the airplane was refueled two days prior at Torrance, California, and then flown to Long Beach. The representative stated that no more than 7 gallons were used.

According to a Hawker Beechcraft Corporation Representative, the fuel capacity for each wing is 40 gallons with 37 gallons of usable fuel. The detent slot on the fuel tank tabs indicate a level of 32 gallons of usable fuel per fuel tank.

METEOROLOGICAL INFORMATION

A review of recorded data from the automated weather observation station at the Lemoore Naval Air Station (NLC), Lemoore, California, located about 19 miles east of the accident site revealed at 2056 conditions were: wind calm, visibility one quarter statute miles, fog, temperature 09 degrees Celsius, dew point 08 degrees Celsius, and an altimeter setting of 30.18 inches of Mercury.

WRECKAGE AND IMPACT INFORMATION

Examination of the airplane by a Federal Aviation Administration (FAA) inspector revealed that the airplane came to rest upright in an open field about a mile north of C80. The engine was mostly separated from the engine firewall and was lying on its left side. The left and right wings remained attached to the fuselage. The left side of the fuselage was substantially damaged. The auxiliary fuel pump switch was observed in the "off" position. The fuel selector valve handle was observed in a position between the right and left main fuel tank positions.

Wreckage recovery personnel reported that prior to movement of the wreckage, about 30 gallons of fuel was removed from the left wing fuel tank and trace amounts of fuel from the right wing fuel tank.

TESTS AND RESEARCH

Examination of the airframe revealed that the left and right wings, right elevator and right horizontal stabilizer were removed to facilitate the wreckage recovery. Flight control continuity was established from the control yoke to all respective flight control surfaces. The fuel selector was found positioned between the left and right fuel tanks. Air pressure was applied to the inlet fuel line from the engine to the fuel selector with no air flow noted. The fuel selector valve handle was moved to the left and right positions, and allowed subsequent air flow throughout the fuel lines. Air pressure was applied to all fuel lines with no blockages or leaks noted.

The fuel vents were free of debris. Electrical power was applied to the airframe and the electric boost pump functioned normally in the high and low settings. Continuity was established from the left and right wing fuel tank floats to the corresponding fuel gauge to the cockpit with no anomalies noted. The left and right fuel tanks were filled with water and no leaks were observed from either fuel tank.

The forward and aft seats were removed by wreckage recovery personnel. The seats were intact and undamaged. All seatbelt harnesses and inertia reels were examined. The inertia reels functioned normally and all safety belts extended and retracted normally. No anomalies were noted with the airframe seat restraints.

No mechanical anomalies were noted with examination of the recovered airframe.

The engine was separated from the airframe and exhibited impact damage to the engine mount legs. The propeller assembly remained intact and attached to the crankshaft propeller flange. All three propeller blades were bent aft about mid section and exhibited blade twisting and multi-directional scratches on the blade face.

The fuel control; fuel inlet fitting, metered fuel outlet fitting and the return fuel outlet fitting were damaged. The throttle and fuel control linkage moved freely by hand. The idle mixture adjustment of the link rod assembly was damaged. The mixture control cable was removed prior to the inspection by recovery personnel. The mixture control arm of the fuel control unit moved freely by hand.

The fuel inlet line fitting from the firewall was separated from the fuel pump. The fuel return line from the fuel control was removed from the fuel pump prior to the inspection by recovery personnel.

To facilitate an engine run, the number 4 and 6 cylinder rocker arm covers were replaced with a slave set along with new engine mount legs installed. The propeller assembly was removed and replaced with a two bladed test propeller. The damaged fuel control unit fittings were removed and slave fittings were installed. A two part epoxy was used to seal damage on the wye induction tube and number 6 induction riser. The propeller cable was removed from the propeller governor. The throttle cable was removed from the throttle valve linkage.

A crack indicator penetrate was applied on the crankshaft propeller flange. A slightly visible indication of a crack was observed aft of the propeller flange radii and was about 1.5 inches in length. The magneto to engine timing was verified prior to the engine run and was found within factory specifications. Approximately 8 quarts of oil were added to the engine prior to the run.

A gravity pressure line from the test stand was attached to the inlet line of the fuel pump. A wire was attached to the mixture lever and routed behind the engine in the test equipment safe area. The aircraft battery was attached to a starter motor. The throttle lever was safety tied to the idle position.

The engine would not operate during the first couple attempts to start the engine. The airframe electric fuel boost pump was attached to the test equipment. The boost pump was actuated briefly during the start process and the engine ran smoothly at idle for approximately 40 seconds before the mixture cutoff was pulled. The second run was conducted using the fuel boost pump and ran smoothly for approximately 40 seconds before the mixture cutoff was pulled.

No pre impact mechanical anomalies were noted during the examination of the recovered engine that would have precluded normal operation.

Using information from recorded radar data and pilot statements, a Hawker Beechcraft Corporation representative calculated basic performance estimations. They estimated the total fuel burn for the accident flight would have been about 26 gallons if "proper leaning techniques were used."

Pilot Information

Certificate:	Private	Age:	56, 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 With waivers/limitations	Last FAA Medical Exam:	August 21, 2008
Occupational Pilot:	No	Last Flight Review or Equivalent:	July 16, 2008
Flight Time:	2259 hours (Total, all aircraft), 251 hours (Total, this make and model), 2198 hours (Pilot In Command, all aircraft), 23 hours (Last 90 days, all aircraft), 3 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	Registration:	N3058Y
Model/Series:	A36	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	E-2366
Landing Gear Type:	Retractable - Tricycle	Seats:	6
Date/Type of Last Inspection:	March 19, 2008 Annual	Certified Max Gross Wt.:	3650 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	2410 Hrs as of last inspection	Engine Manufacturer:	Teledyne Continental Motors
ELT:	Installed, activated, aided in locating accident	Engine Model/Series:	IO-550
Registered Owner:	SOFIAIR INC	Rated Power:	300 Horsepower
Operator:	Robert Stevens	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	Condition of Light:	Night
Observation Facility, Elevation:	NLC,232 ft msl	Distance from Accident Site:	19 Nautical Miles
Observation Time:	20:56 Local	Direction from Accident Site:	30°
Lowest Cloud Condition:	100 ft AGL	Visibility	0 miles
Lowest Ceiling:	Indefinite (V V) / 100 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	/	Turbulence Type Forecast/Actual:	/
Wind Direction:		Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.18 inches Hg	Temperature/Dew Point:	9°C / 8°C
Precipitation and Obscuration:	N/A - None - Fog		
Departure Point:	Long Beach, CA (LGB)	Type of Flight Plan Filed:	IFR
Destination:	Coalinga, CA (308)	Type of Clearance:	IFR
Departure Time:	19:00 Local	Type of Airspace:	Unknown

Airport Information

Airport:	New Coalinga Municipal Airport C80	Runway Surface Type:	
Airport Elevation:	622 ft msl	Runway Surface Condition:	
Runway Used:		IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Minor	Aircraft Damage:	Substantial
Passenger Injuries:	1 Fatal, 1 Minor	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Fatal, 2 Minor	Latitude, Longitude:	36.146389,-120.293609(est)

Administrative Information

Investigator In Charge (IIC):	Cawthra, Joshua
Additional Participating Persons:	James A Henry; Federal Aviation Administration; Fresno, CA Brian J Weber; Hawker Beechcraft Corporation; Wichita, KS Andrew Swick; Teledyne Continental Motors; Mobile, AL
Original Publish Date:	September 10, 2009
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=69512

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