



National Transportation Safety Board Aviation Accident Final Report

Location:	Joshua Tree, CA	Accident Number:	LAX02LA076
Date & Time:	02/03/2002, 0953 PST	Registration:	N9DD
Aircraft:	Beech 95-B55	Aircraft Damage:	Substantial
Defining Event:		Injuries:	2 None
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The twin-engine airplane lost power in both engines while approaching the uncontrolled airport for landing and landed short of the runway in an unprepared field. The airplane was equipped with four fuel tanks; left main and left auxiliary tanks and right main and right auxiliary tanks. Two fuel quantity gauges indicated fuel quantity in either the main tanks or the auxiliary tanks based upon the position selected on a separate switch on the pilot's sub-panel. Approaching the airport the pilot completed the pre-landing checklist and confirmed the fuel selectors were on the main tanks. He had not changed the fuel selector valve handle positions since before takeoff, 45 minutes earlier, and believed he had been feeding fuel from the main tanks the entire flight. He turned on the fuel boost pumps to the "low" position and confirmed the fuel quantity gauge select switch was also set to indicate fuel quantity in the main tanks. As the airplane entered the landing pattern on crosswind leg, 1/2 to 1 mile from the departure end of the runway, the left engine began to "surge." The fuel gauges read 1/3 tank and the pilot, believing fuel supply was not the problem, elected to feather the left propeller and secure the left engine. Continuing the approach, the pilot extended the downwind leg and turned onto base leg about 1.5 miles from the landing runway threshold. As the airplane was turning onto final approach he lowered the landing gear and, as the gear was extending, the right engine began to surge. He then believed he did have a fuel starvation problem and attempted to unfeather and restart the left engine. The airplane was settling rapidly and he realized he wouldn't be able to reach the runway or restart the engines. He located a clearing beyond some houses and landed the airplane there. The person who recovered the wreckage reported draining 23 gallons of fuel from each main tank, 1/2-gallon from the left auxiliary tank and 1 cup of fuel from the right auxiliary tank. The fuel selector valve handles were in the main tank position and the fuel quantity gauge selector switch was in the main tank position. It is possible on this model airplane to select the fuel quantity gauges to indicate fuel quantity in the main tanks while the engines are, in fact, receiving fuel from the auxiliary tanks. Both engines were subsequently installed on a test stand and operated satisfactorily. No mechanical defects were noted on the airframe or engines.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:
The pilot's inadvertent missetting of the fuel selector position on the auxiliary fuel tanks
(versus the main tanks) resulting in fuel starvation of the engines.

Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - NONMECHANICAL

Phase of Operation: APPROACH

Findings

1. 2 ENGINES
2. (C) FUEL TANK SELECTOR POSITION - IMPROPER - PILOT IN COMMAND
3. (C) FLUID,FUEL - STARVATION

Occurrence #2: FORCED LANDING

Phase of Operation: DESCENT - EMERGENCY

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: EMERGENCY LANDING

Findings

4. TERRAIN CONDITION - OPEN FIELD

Factual Information

On February 3, 2002, at 0953 Pacific standard time, a Beech 95-B55, N9DD, landed off-airport at Joshua Tree, California, while on final approach to Hi Desert Airport. The private pilot and one passenger were not injured. The aircraft was substantially damaged. The personal flight was operated by the owner under 14 CFR Part 91, and departed Santa Monica, California, at 0850. Visual meteorological conditions prevailed and no flight plan was filed.

The owner of the Joshua Tree Airport told the Safety Board investigator he heard the airplane approaching and lose power on one engine while on downwind leg, and the second engine while on final approach. He then heard the airplane crash, called 911 on the telephone, and then went to the accident site. He said that the entire airplane, including both wings, was heavily damaged. He removed the two fuel caps on the right wing and observed no fuel in the tanks. He removed the fuel tank cap on the left, main tank (marked "37 gallons"), and found the tank nearly full of a clear blue fluid that looked and smelled like avgas. The left auxiliary tank appeared to be empty. In the cockpit, both fuel selectors were pointed toward their respective main tank.

The pilot told the Safety Board investigator that he had about 600 hours experience in the airplane, and he knew that the fuel gauges were functional and accurate because he had, on occasion, used fuel down to a low amount before switching tanks. Since the completion of the recent annual inspection, the plane had flown a trip of about 4 hours duration from Santa Monica to Monterey and back, as well as a short 10-minute maintenance flight with his mechanic. The airplane had four fuel tanks, a left and right main tank and a left and right auxiliary tank, totaling 136 gallons of usable fuel. A typical fuel flow is 36 gallons per hour (total). The airplane was last fueled ("topped-off") prior to departing Monterey. The return trip from Monterey was about 1.5-hour duration and included use of the auxiliary fuel. On the accident flight, from Santa Monica to Joshua Tree, he said the fuel selectors remained on the main tanks the entire flight, which took about 45 minutes.

The pilot said that on downwind leg for landing on runway 24, he had throttled back the engines to 18 inches of manifold pressure. The left engine started "surging," it did not quit entirely, and there wasn't much yaw associated with the surging due to the low manifold pressure setting. He glanced at the fuel quantity gauges and saw they were between 1/4 and 1/2. He concluded the problem was not fuel, as that agreed with his assessment of fuel remaining. Because he was close to the airport, and only 1,000 feet agl, he chose to shutdown and feather the left engine and turned the left fuel selector "off." He increased right engine manifold pressure to 20 inches, which held the plane's altitude with little yaw. He made a wide base leg for the airport and lowered the landing gear as the airplane was turning final. Within 10 seconds of lowering the landing gear, the right engine lost power. He attempted at that time to restart the left engine by turning the left fuel selector back to the main tank, pushing left propeller and throttle controls full forward, turning the boost pump on, and engaging the engine starter. The attempt was unsuccessful, and rather than continuing to analyze the fuel system, he elected to "fly the airplane." As he rolled the wings level on final approach, the right engine seemed to regain power but the airplane was slow and at low altitude (he estimated 500 feet agl), and he elected to make an off-airport landing.

The airplane was examined by the Safety Board investigator at the facilities of Air Transport in Phoenix, Arizona, on February 25 and 26, 2002.

The left engine was installed on a test stand and run. The intake manifold balance tube exhibited crushing and was punctured at two locations that were sealed with duct tape. The oil sump exhibited a dent and small puncture in the right, rear corner, accompanied by oil seepage that was not repaired. Oil dripped from the puncture at the rate of about 1 drop each 10 seconds. The oil dipstick showed there were 8 quarts of oil remaining in the engine and none was added for the engine run. The right rear intake manifold elbow was crushed and the corresponding part from the right-hand engine was removed and installed for the engine run. All four engine mounts were broken in the "I" section and were replaced with serviceable mounts. The two exhaust pipes were cut off approximately 12 inches from the discharge end in order to enable the engine to be installed on the test stand and clear the mounting rails of the stand. The aircraft's propeller was removed from the engine and a borrowed, 2-blade propeller was installed for the test run. The engine started after about 15 seconds of cranking and priming. The engine ran smoothly and was operated from idle to approximately 2000 rpm.

The right engine was installed on the same test stand and run with the same results. The four broken engine mounts were replaced, the right-rear intake manifold elbow was reinstalled, the exhaust pipe ends were cut to fit the test stand, and the same propeller was installed prior to running the engine.

The airplane was equipped with 3-blade propellers. The left propeller, when viewed from the front, exhibited a smooth, uniform, aft bending of about 45 degrees over the outer half span of two of the blades. The outer half span of these two blades exhibited a pattern of scratch marks on the front side of the blade extending diagonally across them. The third blade was bent smoothly aft about 10 degrees over its entire span and exhibited a shiny, polished appearance to the leading edge near the tip. The three blades appeared to be in the normal flight (unfeathered) position, and the hub mechanism was tight when the blades were twisted by hand.

All three blades of the right propeller exhibited abrasion, chordwise scratches and were rolled and twisted aft, outboard of the midspan. One blade was rolled up about 180 degrees, another about 150 degrees, and the third about 90 degrees. There was a modest amount of torsional twisting. The three blades appeared to be in the normal flight (unfeathered) position, and the hub mechanism was tight when the blades were twisted by hand.

The airplane was equipped with four fuel tanks; a left and right main tank of 37-gallon (usable) capacity and, outboard of the main tank in each wing, an auxiliary tank of 31 gallons (usable) capacity. Two fuel gauges on the instrument panel display fuel quantity in either the two main tanks or the two auxiliary tanks, depending upon the position of a selector switch located on the lower left sub-panel, which is selected by the pilot. Two fuel selectors are located on a floor console of the cockpit, in front of and between the front seats. The pilot can select to feed fuel to each engine from its respective main or auxiliary tank or to crossfeed fuel to either engine from the opposite main tank. The Raytheon Aircraft Company party representative confirmed that it is possible, on this model airplane, to select fuel to supply the engines from one set of tanks (main or auxiliary) while the fuel quantity gauges indicate quantity in the other set of tanks.

Examination of the wings revealed no visual punctures or breaches in the fuel cells and there were no visible external fuel stains. The fuel system vents were open when blown through and the main sump fuel screens were clear. In the cockpit the fuel selectors were in the main tank position for each engine and the fuel quantity selector switch was in the main tank position.

The fuel boost pump switches were in the "low" position.

The operator of the retrieval company that picked up the aircraft reported no evidence of fuel leakage at the site. He reported draining 23 gallons of fuel from each main tank; however, the left auxiliary tank contained 1/2 gallon of fuel and the right auxiliary tank contained about 1/2 cup of fuel. The Raytheon Aircraft Company party representative said the differing quantities reportedly observed by the airport operator earlier were likely due to the airplane resting in an unlevel attitude.

Pilot Information

Certificate:	Private	Age:	39, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim.	Last FAA Medical Exam:	07/12/2000
Occupational Pilot:		Last Flight Review or Equivalent:	08/19/2001
Flight Time:	1077 hours (Total, all aircraft), 620 hours (Total, this make and model), 25 hours (Last 90 days, all aircraft), 4 hours (Last 30 days, all aircraft)		

Other Flight Crew Information

Certificate:	Commercial	Age:	54, Male
Airplane Rating(s):	Single-engine Land; Single-engine Sea	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 Valid Medical--no waivers/lim.	Last FAA Medical Exam:	05/04/2000
Occupational Pilot:		Last Flight Review or Equivalent:	06/04/2001
Flight Time:	1048 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	Registration:	N9DD
Model/Series:	95-B55	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	TC-1585
Landing Gear Type:	Retractable - Tricycle	Seats:	5
Date/Type of Last Inspection:	01/25/2002, Annual	Certified Max Gross Wt.:	5100 lbs
Time Since Last Inspection:	5 Hours	Engines:	2 Reciprocating
Airframe Total Time:	4075 Hours at time of accident	Engine Manufacturer:	Continental
ELT:	Installed, not activated	Engine Model/Series:	IO-520-E
Registered Owner:	David S. Blakeslee	Rated Power:	285 hp
Operator:	David S. Blakeslee	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	PSP, 474 ft msl	Distance from Accident Site:	23 Nautical Miles
Observation Time:	0953 PST	Direction from Accident Site:	200°
Lowest Cloud Condition:	Clear	Visibility	10 Miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	3 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	150°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.27 inches Hg	Temperature/Dew Point:	17°C / -9°C
Precipitation and Obscuration:			
Departure Point:	Santa Monica, CA (SMO)	Type of Flight Plan Filed:	None
Destination:	Joshua Tree, CA (L80)	Type of Clearance:	None
Departure Time:	0850 PST	Type of Airspace:	Class G

Airport Information

Airport:	Hi Desert (L80)	Runway Surface Type:	Asphalt
Airport Elevation:	2464 ft	Runway Surface Condition:	Dry
Runway Used:	24	IFR Approach:	None
Runway Length/Width:	2493 ft / 50 ft	VFR Approach/Landing:	Full Stop; Traffic Pattern

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	1 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 None	Latitude, Longitude:	

Administrative Information

Investigator In Charge (IIC):	RICHARD B PARKER	Report Date:	09/30/2003
Additional Participating Persons:	James F Coughran; FAA Flt Stnds Dist Office; Riverside, CA Robert L Ramey; Raytheon Aircraft Company; Wichita, KS Michael J Grimes; Teledyne Continental Motors; Mobile, AL		
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubinq@ntsb.gov , or at 800-877-6799. Dockets released after this date are available at http://dms.nts.gov/pubdms/ .		

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