Aviation Investigation Final Report

Location:	Dallas, Texas	**Accident Number:**	FTW02LA008
Date & Time:	October 9, 2001, 13:22 Local	**Registration:**	N690JP
Aircraft:	Beech C90	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Serious
Flight Conducted Under:	Part 91: General aviation		

Analysis

The commercial pilot flew the airplane on a cross-country flight of at least 2 hours and 47 minutes before dropping of his passengers, and flew back for 2 hours and 7 minutes without refueling. The pilot reported that as the airplane turned onto final approach, the right engine began to surge. He reduced the power on the right engine and increased power on the left, but the airplane started to roll right so he elected to reduce the power on the left engine and land in an alley. Prior to impacting wires, the pilot retracted the landing gear and brought the condition levers to "cut-off." A witness observed the airplane prior to impact and noted that the "motor wasn't on." The airplane impacted power lines, a tree, a natural gas meter, two residences, and a fence. The fuel tanks were compromised during the impact sequence, and the fire department sprayed the area with fire retardant foam. A test of the water runoff revealed "negative results for petroleum risk." Examination of both engines' fuel lines between their respective firewalls and fuel heaters, and fuel pumps and fuel control units revealed that they were void of fuel.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the pilot's failure to refuel the airplane, which resulted in fuel exhaustion and subsequent loss of dual engine power while on approach.

Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - NONMECHANICAL
Phase of Operation: APPROACH - VFR PATTERN - FINAL APPROACH

Findings
1. 2 ENGINES
2. (C) FLUID,FUEL - EXHAUSTION
3. (C) REFUELING - NOT PERFORMED - PILOT IN COMMAND

Occurrence #2: FORCED LANDING
Phase of Operation: EMERGENCY DESCENT/LANDING

Occurrence #3: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: EMERGENCY DESCENT/LANDING

Findings
4. OBJECT - WIRE,TRANSMISSION
5. OBJECT - TREE(S)
6. OBJECT - RESIDENCE
7. OBJECT - FENCE
8. OBJECT - OTHER

Factual Information

HISTORY OF FLIGHT

On October 9, 2001, at 1322 central daylight time, a Beech C90 (King Air) twin-turboprop airplane, N690JP, was substantially damaged when it impacted a residential area during a forced landing following a loss of engine power while on approach to the Dallas Love Airport, Dallas, Texas. The airplane was registered to J & D Aircraft Sales LLC of Pasco, Washington. The airplane was operated by private individuals, who were in the process of purchasing the aircraft. The commercial pilot, who was the sole occupant, sustained serious injuries. Visual meteorological conditions prevailed and an instrument flight rules flight plan was filed for the 14 Code of Federal Regulations Part 91 business flight. The cross-country flight originated from Taos, New Mexico, at 1115 (2 hours and 7 minutes prior to the accident).

According to reports from Dallas Love Air Traffic Control Tower, the flight was on a visual approach to runway 13L. When the airplane was on final approach, the controller noticed the airplane in "level flight descending out of sight behind hangars." The controller asked the pilot if he was experiencing a problem; however, the controller did not receive a reply. The airplane descended into a residential area where it struck power lines, a tree, a natural gas meter, two private residences, and a fence.

According to an FAA inspector, who responded to the accident site, the flight departed from Dallas Love Airport at 0757 on the morning of the accident after the pilot had the fuel tanks topped off with 244 gallons of fuel. Air traffic control data indicated that the airplane descended from radar coverage into Taos at 1044 (2 hours and 47 minutes after departure). According to service personnel in Taos, the airplane was on the ground for approximately 15 minutes, and departed for Dallas with just the pilot on board.

An FAA inspector, who interviewed the pilot on October 10, 2001, stated that the pilot reported that while the airplane was on base leg to runway 13L at Dallas Love, the right engine began to surge. The pilot turned on the boost pumps and retracted the landing gear. The pilot reported that the right engine lost total power and the airplane's airspeed was approaching the minimum controllable airspeed (Vmc); therefore, he reduced power on the left engine and attempted a forced landing to the residential area.

In a written statement, submitted to the NTSB investigator-in-charge (IIC) on January 4, 2002, the pilot reported that the return flight from Taos was uneventful until the flight approached Wichita Falls, Texas, when the pilot noticed that the right hand fuel gauge "spiked to zero and returned to its previous indication." The pilot reported that the "anomaly happened twice and did not occur again for the remainder of the flight." He added that the flight continued "normally" until the airplane turned onto short final for runway 13L. The right engine "began to

surge violently, so [he] brought the power back and increased power to the left engine. This made the airplane aircraft roll to the right, so [he] brought [the left] engine back as well." The pilot realized that the airplane would not make it to the runway and he looked for a place to land. The pilot found an alley in a residential area and attempted to land there. He stated that the airplane was about to impact the power lines, so he "retracted the landing gear, brought the condition levers back to cut-off, and kept flying until [he] blacked out."

One witness, who was located in the residential area, stated that she heard a "crackling sound," which caused her to look up and see the airplane "barely hitting the electric tower. The motor wasn't on." She added that one of the wings clipped a television satellite dish and the side of a house. The aircraft continued across the street and impacted a garage and a tree where it came to rest.

Another witness, who was also located in the residential area, stated that he noticed the airplane flying very low. He observed the airplane impact electrical wires with the lower left wing and "sparks flew everywhere." The airplane then disappeared from his view. He added that he thought the "engines were missing or sputtering."

PERSONNEL INFORMATION

The commercial pilot held a second class medical certificate without limitations that was issued on May 25, 2001. The pilot reported having accumulated approximately 7,000 total flight hours, of which 5,000 hours were in multi-engine airplanes and 100 hours were in the same make and model as the accident airplane.

AIRCRAFT INFORMATION

The aircraft was equipped with two 550 shaft-horsepower Pratt & Whitney PT6A-21 engines. Review of maintenance records revealed that the aircraft underwent Phase 2 and Phase 3 inspections in accordance with the Beech King Air inspection procedures on April 27, 2001, at an aircraft total time of 7,325.2 hours. At the time of the last inspection, the engines had accumulated a total of 7,325.2 hours, and had accumulated 3,892.2 and 3,669.8 hours since the last overhaul on the left and right engines, respectively. The left and right engines had accumulated 1,405.2 and 1,182.8 hours since their last hot section inspections, respectively. During the aircraft's last inspection, McCauley 4-bladed propellers were installed in accordance with Supplemental Type Certificate (STC) SA1241GL at propeller total times of 50.8 hours for both the left and right propellers. At the time of the accident, the airplane had accumulated a total of 7,356 hours.

According to the King Air C90 Pilot Operating Handbook fuel system description, "the fuel system consists of two separate systems connected by a crossfeed system. Fuel for each engine is supplied from a nacelle tank and four interconnected wing tanks for a total of 192 gallons of usable fuel for each side with all tanks full. The outboard wing tanks supply the center section wing tank by gravity flow. The nacelle tank draws its fuel supply from the center

section tank. Since the center section tank is lower than the other wing tanks and the nacelle tank, the fuel is transferred to the nacelle tank by the fuel transfer pump in the low spot of the center section tank. Each system has two filler openings, one in the nacelle tank and one in the leading edge tank. To assure that the system is properly filled, service the nacelle tank first, then the wing tanks."

In written statements provided by the fueling service in Dallas, the aircraft refueling personnel, who fueled the airplane on the morning of the accident, stated that they filled the nacelle fuel tanks prior to filling the wing fuel tanks.

WRECKAGE AND IMPACT INFORMATION

The airplane came to rest upright in the yard of a residence. A tree was crushed under the belly of the aircraft. Review of photographs taken at the accident site revealed that the airplane's wings, outboard of both engines, sustained impact damage, which compromised the fuel system. The propellers remained attached to the engines. The left and right propeller blades were intact and attached to the propeller hubs and were bent and twisted. The engines remained attached to their wings; however, they were deflected downward. The left horizontal stabilizer was torn from its attachment fitting.

FAA inspectors arrived at the accident site at 1415, and documented the cockpit. Cockpit documentation revealed that the fuel boost and transfer pumps were in the OFF position, the power levers were in the mid-range position, the propeller levers were in the full forward position, and the condition levers were at the low idle position. The rudder trim was set in the neutral position, the aileron trim was found in the maximum (5 degrees) right wing down trim, and the elevator trim was set at a 7 degree up position.

The aircraft was transported to Air Salvage of Dallas, Lancaster, Texas, for further examination.

TESTS AND RESEARCH

On October 9, 2001, an environmental inspector with the City of Dallas' Storm Water Quality department conducted a petroleum risk test. According to the inspector, upon his arrival at the accident site, he noticed the "fire department spraying fire-suppressing [foam] around plane wreckage. Water runoff from related activities showed no signs of any petroleum product. No rainbow sheen or fuel odor was noted on and in water. A test of runoff with 'Spilfyter' (brand) chemical classifier showed negative results for petroleum risk with pH normal at neutral." The inspector returned to the accident site the following day and conducted the same tests and "found no signs of fuel in street, curb, or storm drain system."

On October 17, 2001, an NTSB investigator and a representative of the aircraft manufacturer examined the fuel lines of the airplane at Air Salvage of Dallas, Lancaster, Texas. According to the NTSB investigator, approximately 1 liter of fuel was drained from the left and right fuel

sumps located in the belly of the aircraft. They then examined both the left and right engines and noted that for each engine, there was no fuel in the line between the firewall to the fuel heater, nor was there fuel in the line between the fuel pump and the fuel control unit.

ADDITIONAL INFORMATION

The wreckage was released to Air Salvage of Dallas on January 4, 2002.

Pilot Information

Certificate:	Commercial	**Age:**	36,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:**	No
Instructor Rating(s):	Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 2 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	May 25, 2001
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	July 1, 2001
Flight Time:	7000 hours (Total, all aircraft), 100 hours (Total, this make and model), 6000 hours (Pilot In Command, all aircraft), 250 hours (Last 90 days, all aircraft), 90 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N690JP
Model/Series:	C90	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	LJ-690
Landing Gear Type:	Retractable - Tricycle	**Seats:**	10
Date/Type of Last Inspection:	April 27, 2001 Continuous airworthiness	**Certified Max Gross Wt.:**	9650 lbs
Time Since Last Inspection:	30.8 Hrs	**Engines:**	2 Turbo prop
Airframe Total Time:	2356.4 Hrs at time of accident	**Engine Manufacturer:**	P&W
ELT:	Installed	**Engine Model/Series:**	PT6A-21
Registered Owner:	J & D Aircraft Sales LLC	**Rated Power:**	550 Horsepower
Operator:	George Reynolds & Peter Baldwin	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	DAL,603 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	13:32 Local	**Direction from Accident Site:**	130°
Lowest Cloud Condition:	Scattered / 2100 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	Broken / 8000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	19 knots / 22 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	150°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.97 inches Hg	**Temperature/Dew Point:**	24°C / 21°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Taos, TX (SKX)	**Type of Flight Plan Filed:**	IFR
Destination:	Dallas, TX (DAL)	**Type of Clearance:**	IFR
Departure Time:	10:15 Local	**Type of Airspace:**	Class B

Airport Information

Airport:	Dallas Love Field DAL	**Runway Surface Type:**	Concrete
Airport Elevation:	603 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	13L	**IFR Approach:**	Visual
Runway Length/Width:	9000 ft / 200 ft	**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious	**Latitude, Longitude:**	32.849655,-96.829643(est)

Administrative Information

Investigator In Charge (IIC):	Charnon, Nicole
Additional Participating Persons:	Thomas J Tucker; FAA FSDO; Dallas, TX
Original Publish Date:	July 2, 2002
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=53584