



National Transportation Safety Board Aviation Accident Final Report

Location:	Carson City, NV	Accident Number:	LAX01LA299
Date & Time:	09/01/2001, 1953 PDT	Registration:	N9199W
Aircraft:	Piper PA-28-235	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	3 Serious
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

As the airplane returned to the airport after a local flight at twilight, the pilot completed the landing checklist as the airplane approached the 45-degree leg. The pilot intended to move the fuel selector handle from the right tip tank position, across two intermediate tank positions, to the left tip tank position. The next position further to the left is the "off" position, which is guarded by a spring-loaded mechanical stop. In the wreckage the mechanical stop was found attached to a plastic cover over the fuel selector; however, the cover was broken from the selector handle assembly. Because of turbulent flight conditions, the pilot entered the downwind leg at the uncontrolled airport about 1,000 feet high and descended on extended downwind leg at near idle power. When he advanced the throttle to arrest the airplane's descent on extended base leg, there was no response from the engine. The fuel pressure read "zero." He attempted to restart the engine and switched the fuel selector to another tank position; however, insufficient altitude remained to afford sufficient time to restart the engine. The aircraft impacted a tree and crashed in the back yard of a residence, striking an occupant of the residence who was in the yard. The morning after the accident there was no fuel in the fuel lines forward of the firewall; however, the aircraft had been inverted overnight. About 2.5 ounces of fuel was found in the carburetor float bowl. When the fuel selector handle was positioned between tanks, the investigation showed each of the adjacent ports was about 10-percent open. Examination of the airplane revealed the annual inspection was 1-month overdue; however, it did not reveal any evidence of preimpact mechanical failure.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's incorrect setting of the fuel selector valve during the prelanding checklist to a position between usable tanks, resulting in fuel starvation.

Findings

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

Findings

1. WEATHER CONDITION - TURBULENCE
2. LIGHT CONDITION - DUSK
3. MAINTENANCE,ANNUAL INSPECTION - OVERDUE
4. (C) FUEL TANK SELECTOR POSITION - INCORRECT - PILOT IN COMMAND
5. FUEL SUPPLY - NOT AVAILABLE

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: EMERGENCY DESCENT/LANDING

Findings

6. TERRAIN CONDITION - RESIDENTIAL AREA

Factual Information

On September 1, 2001, at 1953 hours Pacific daylight time, a Piper PA-28-235, N9199W, impacted terrain in the back yard of a residence following loss of engine power while on landing final approach at the Carson airport, Carson City, Nevada. The private pilot and one passenger were seriously injured. A resident of the property, who was standing in the yard, was struck by the airplane and seriously injured. The airplane was destroyed. The local area personal flight was operated by the owner/pilot under 14 CFR Part 91, and originated from Carson City at 1915. Visual meteorological conditions prevailed and no flight plan was filed.

The aircraft was equipped with four fuel tanks; two in the left wing and two in the right. The aircraft checklist requires that the "fullest" tank be selected for takeoff and landing. The pilot told a Federal Aviation Administration inspector he recalled that, before takeoff, there was 17 gallons of fuel in each outboard tank, less than 5 gallons in the left-hand inboard tank, and less than 10 gallons in the right-hand inboard tank. He departed Carson City about 40 minutes before the accident with the right-hand outboard fuel tank selected. As he returned to Carson City for landing, without an intermediate landing, he placed the fuel selector in the left, outboard tank position. About 1 minute later, as he was turning from left downwind leg to base leg for landing on runway 27, the engine did not respond when he added power. He recalled that the fuel pressure gauge read "zero" and recalled turning the electric fuel pump was on; however, the engine did not respond. According to the inspector, twilight conditions prevailed and the airplane struck electrical power lines and a tree before coming to rest in the back yard of a residence. The residence is aligned with the landing final approach about 0.4 miles from the runway threshold. The inspector reported the fuel selector was in the left-hand, outboard tank position when he arrived at the scene the morning after the accident.

The pilot reported that, prior to the accident flight, he preflighted the airplane and that, on this airplane, it was not uncommon to find some contamination in the fuel sumps during preflight and to have to drain 2 or 3 test samples before it cleared. He recalled that on the day of the accident he had to drain the left tanks 5 times before he got a clear sample. The contamination was in the form of brown flake material, not liquid.

On the accident flight, after departure from Carson City, he climbed the airplane to 8,500 feet, leaned the mixture, and flew in cruising flight for about 40 minutes. The engine operated smoothly. He had taken off and cruised on the right, outboard tank. As he returned to land at Carson City, runway 27 was in use with left-hand traffic. He changed tanks to the left, outboard tank (the fullest tank) and turned on the electric fuel pump as he turned onto the 45-degree leg, southwest of the airport, at 7,500 feet msl over the Ormsby House (hotel/casino). He reduced the engine power to 17 inches of manifold pressure and 2,400 rpm and enriched the engine fuel mixture by moving the control "forward a bit." The Ormsby House is about 1 mile from the downwind leg, and the pattern altitude at Carson City is 5,500 feet. The pilot said he turned onto the downwind leg high at 6,500 feet, reduced manifold pressure further to 12 inches, and continued his descent on downwind leg. On reaching 6,000 feet on an extended downwind leg, he turned onto base leg while descending at about 700 feet per minute. When he advanced the throttle to add power there was no response from the engine. The propeller and engine continued to smoothly windmill but there was absolutely no power at all from the engine. He switched the fuel selector to the left inboard tank, enriched the mixture "half way," pushed in the carburetor heat control and advanced the throttle and propeller controls; all with no effect. He later returned the fuel selector to the left outboard tank but there was no

further power output prior to the accident.

In his report to the Safety Board, the pilot stated that the air was sufficiently turbulent and that he and his passenger decided to return and land.

One of the area residents, who witnessed the accident, told the Safety Board investigator that she and her neighbors were outdoors watching the moon rise and that conditions at the time of the accident were "pretty dark."

The pilot told the Safety Board investigator he acquired the aircraft in June 2001. He said that after he acquired the airplane he experienced rough engine operation on two occasions; both times while operating at 8-10,000 feet. Following the second occurrence he took the airplane to a mechanic who replaced both magnetos and the spark plug wires. Following that repair, he flew the airplane to Boise, Idaho, in late July, and returned to Carson City August 11th. During the trip to Boise, he had one additional incident of "sputtering" during climb out through 8,000 feet on the return flight. After the return from Boise on August 11th, the airplane did not fly again until the accident flight on September 1st. The airplane was stored outdoors at Carson City.

The airplane was examined by the Safety Board investigator at the facilities of Plain Parts in Pleasant Grove, California, on December 5, 2001. The engine hour meter on the recording tachometer was at 3738.19 hours. According to the aircraft's logbooks a "loaner" tachometer was installed November 21, 2000, at aircraft total time of 3121.3 hours, and, at that time, the installed tachometer read "3741.1" hours. Subsequently, on August 9, 2001, the engine maintenance was performed to replace the magnetos, ignition harness and spark plugs, and that logbook entry gave a recording tachometer reading of 3725.88 hours. The most recent annual inspection was performed July 13, 2000.

The left wing was severed from the fuselage at the wing root, the wing was severed at the midspan, and the wingtip fuel tank was severed and destroyed. The fuel outlet finger screen from the wingtip fuel tank was not located. The right wing remained attached to the fuselage and exhibited uniform leading edge damage, typically 6-inch dents, from the root to the tip; however, the right wingtip fuel tank was intact. The right-hand horizontal stabilizer had a leading edge dent near the tip. The upper portion of the firewall and the instrument panel were deformed aft about 1 foot.

The airplane had four fuel tanks; two tanks in the wings (inboard) and two tanks incorporated in the fiberglass wingtips. The vents of all four tanks were open when blown through gently. The plastic cover over the fuel selector in the cockpit was damaged and loose; however, the handle was to the right of center. When the fuel valve sump cover was removed, the open ports of the fuel selector valve were in the right, inboard tank position, and the sump screen was free of debris. The investigator noted that, when the valve plate was in between two tank positions, each of the adjacent ports was about 10-percent open. When electrical power was applied to the electric fuel boost pumps, the pumps made a tapping sound and, when the inlet line was placed in a bucket of water, pumped water under pressure. The fuel pressure gauge indicated pressure when air pressure was applied to the back of the gauge. The auxiliary fuel pump switch was in the "on" position.

The engine remained attached to the fuselage but was angled upward approximately 90 degrees. The left magneto and oil filter adapter were broken from the accessory case. The mechanical fuel pump body was fractured, although the fracture did not involve the diaphragm

cavity. The mixture and carburetor heat control cables were separated from the carburetor and carburetor heat box. The throttle cable remained attached to the carburetor; however, the throttle was at the idle position on the carburetor and the full-throttle position in the cockpit. There was impact damage to the number 2 (left front) engine cylinder and the intake pushrod housing was bent. The propeller governor was broken from the engine nose case at the base; however, the governor turned freely and the mounting base screen was clear.

The engine was mechanically continuous when rotated by hand. All six cylinders produced thumb compression and appropriate valve sequence and lift. The accessory case gearing rotated, the fuel pump plunger reciprocated, and the propeller governor drive rotated. The cylinder bores were shiny and unscored and the piston faces and cylinder domes had modest brown deposits. The oil filter was opened and the element was free of debris. The air filter element was intact. The exhaust system and muffler exhibited a light brown coloration and were unobstructed. The muffler flame tube was intact.

The left magneto was separated from the accessory case at its base and the ignition wires to the number 2 and number 6 cylinder upper spark plugs were damaged. The timing ring on the starter gear on the front of the engine was fractured and unusable. Both magnetos produced spark at all six towers when rotated by hand. The spark plug electrodes were uniformly round and free of contamination and exhibited a light brown color. The magneto switch was in the "off" position and the key was absent.

The mechanical fuel pump was fractured at the actuator leg cavity; however, the diaphragm portion of the pump was intact and pumped about a teaspoon of blue fluid resembling avgas when the reciprocating arm was operated manually. With the inlet line in a bucket of water, the pump pumped water. When opened, the fuel pump diaphragms were intact and the check valves stopped flow in the appropriate direction. The carburetor inlet screen was clear and the float bowl was free of debris.

The Safety Board investigator had asked the recovery contractor who picked up the airplane after the accident to open the fuel lines forward of the firewall and report if fuel was present in the lines. He reported that he drained 2.5 ounces of blue liquid resembling avgas from the carburetor bowl and only traces of fuel from the other lines. The airplane had rested inverted overnight prior to him checking the lines. He reported there was a strong fuel odor at the site.

The fuel selector control was located on the floor console beneath the center of the instrument panel. The selector operated in a left-to-right manner with five selector positions: OFF-LEFT, TIP-LEFT, MAIN-RIGHT, MAIN-RIGHT TIP. Between the LEFT TIP position and the OFF position there was a spring operated mechanical stop. The mechanical stop was attached to the plastic cover over the fuel selector, which was damaged and loose; however, the mechanical stop device was intact attached to the plastic cover.

The wreckage was released to the owner on December 12, 2001.

Pilot Information

Certificate:	Private	Age:	45, Male
Airplane Rating(s):	Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim.	Last FAA Medical Exam:	03/21/2000
Occupational Pilot:		Last Flight Review or Equivalent:	08/09/2000
Flight Time:	310 hours (Total, all aircraft), 145 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N9199W
Model/Series:	PA-28-235	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	28-10860
Landing Gear Type:	Tricycle	Seats:	4
Date/Type of Last Inspection:	07/13/2000, Annual	Certified Max Gross Wt.:	2900 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	3097 Hours as of last inspection	Engine Manufacturer:	Lycoming
ELT:	Installed	Engine Model/Series:	O-540-B4B5
Registered Owner:	Kevin V. Jensen	Rated Power:	235 hp
Operator:	Kevin V. Jensen	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Dusk
Observation Facility, Elevation:	RNO, 4412 ft msl	Distance from Accident Site:	18 Nautical Miles
Observation Time:	1956 PDT	Direction from Accident Site:	340°
Lowest Cloud Condition:	Scattered / 20000 ft agl	Visibility	10 Miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	15 knots / 20 knots	Turbulence Type Forecast/Actual:	/
Wind Direction:	280°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.97 inches Hg	Temperature/Dew Point:	27° C / 2° C
Precipitation and Obscuration:			
Departure Point:	Carson City, NV (CXP)	Type of Flight Plan Filed:	None
Destination:		Type of Clearance:	None
Departure Time:	1915 PDT	Type of Airspace:	Class G

Airport Information

Airport:	Carson (CXP)	Runway Surface Type:	Asphalt
Airport Elevation:	4697 ft	Runway Surface Condition:	Dry
Runway Used:	27	IFR Approach:	None
Runway Length/Width:	5900 ft / 75 ft	VFR Approach/Landing:	Full Stop; Traffic Pattern

Wreckage and Impact Information

Crew Injuries:	1 Serious	Aircraft Damage:	Destroyed
Passenger Injuries:	1 Serious	Aircraft Fire:	None
Ground Injuries:	1 Serious	Aircraft Explosion:	None
Total Injuries:	3 Serious	Latitude, Longitude:	

Administrative Information

Investigator In Charge (IIC):	RICHARD PARKER	Report Date:	05/28/2002
Additional Participating Persons:	LARRY CHEEK; FAA Ft Stnds Dist Office; Reno, NV CHARLES R LITTLE; The New Piper Aircraft, Inc.; Vero Beach, FL MARK W PLATT; Textron Lycoming; Williamsport, PA		
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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