Aviation Investigation Final Report

Location:	Reading, Pennsylvania	**Accident Number:**	ERA15LA294
Date & Time:	August 1, 2015, 13:19 Local	**Registration:**	N6566D
Aircraft:	COMMANDER AIRCRAFT CO 114	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (total)	**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

According to the airline transport pilot, about 30 minutes into the personal flight and while the airplane was at 3,000 ft mean sea level, the engine "seemed to lose power for a second." About 1 second later, the engine "shut off completely." The pilot tried to restart the engine by turning on the electric fuel boost pump and then moving the fuel selector to each of the positions without success. He then moved the fuel selector back to the "both tanks" position and set the nose pitch for best glide speed; however, the airplane was unable to glide to the airport, so the pilot set it up for an off-field landing. During the forced landing, the airplane encountered uneven terrain, and the right wing struck a tree.

A postaccident engine test run was conducted, and the engine would not start. Subsequent examination of the engine revealed that a fuel supply line fitting at the fuel manifold was loose and that fuel leaked excessively from the fitting when the electric boost pump was turned on. After the fitting was tightened, the engine started without hesitation and ran continuously at idle power. Due to three bent propeller blades and vibration, a higher power setting was not attempted. A review of the airplane and engine logbooks found no entries indicating that any recent maintenance had been conducted on the fuel system.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The improper installation of the fuel supply line fitting at the fuel manifold, which resulted in the line loosening in-flight, fuel leakage, and a subsequent total loss of engine power.

Findings

Aircraft	(general) - Incorrect service/maintenance
Personnel issues	Installation - Maintenance personnel
Environmental issues	Rough terrain - Contributed to outcome
Environmental issues	Tree(s) - Contributed to outcome

Factual Information

History of Flight

Prior to flight	Aircraft maintenance event
Enroute-cruise	Loss of engine power (total) (Defining event)
Emergency descent	Off-field or emergency landing
Landing-landing roll	Collision with terr/obj (non-CFIT)

On August 1, 2015, about 1319 eastern daylight time, a Commander Aircraft Company 114-B, N6566D, was force landed following a reported loss of engine power during cruise flight near Reading, Pennsylvania. The airline transport-rated pilot and a private pilot-rated passenger were not injured, and the airplane was substantially damaged. The airplane was registered to Precision Machine Tool Solutions LLC and was operated by the pilot under the provisions of Title 14 Code of Federal Regulations Part 91 as a personal flight. Day, visual meteorological conditions prevailed, and no flight plan was filed. The local flight originated at Reading Regional Airport (RDG), Reading, Pennsylvania about 1250.

The airline transport-rated pilot, who reported that he was the pilot-in-command, seated in the right, cockpit seat, reported the following. About 30 minutes into the flight, at 3,000 feet above mean sea level, while returning to RDG, the engine "seemed to lose power for a second." About 1 second later, the engine "shut off completely." He assumed the controls and immediately began to accomplish the engine failure procedures. He turned on the electric boost pump and moved the fuel tank selector to all positions; the engine would not restart. He returned the selector to the "both tanks" position and set the nose pitch for best glide speed. He called RDG approach control and advised them of the situation. Unable to glide to the airport, he set up for an off-field landing. During the forced landing, undulating terrain was encountered, and the right wing struck a tree. The airplane came to a stop in a vegetable garden and both occupants exited the cockpit.

An inspector with the Federal Aviation Administration (FAA) responded to the accident site and examined the wreckage. The fuselage, empennage, and left wing exhibited structural damage from impact forces. The right wing was sheared off at the root. Both wing tanks contained fuel, and there was evidence of fuel leakage at the accident site. The wreckage was recovered and moved to a recovery facility for further examination.

On September 16, 2015, the engine was examined by an investigator from the NTSB and an inspector from the FAA. The wings had been removed from the airplane for transport to the recovery facility. The remaining fuselage was secured to a flatbed trailer for an engine test-run. Fuel was supplied via a 5-gallon container to the right wing side of the fuel selector. During the first attempt, the engine did not start. Subsequent examination of the engine revealed a loose fitting that connected the fuel supply line to the fuel manifold, with fuel leaking from the fitting when the auxiliary fuel pump was activated. The fitting was tightened and the engine then started on the first attempt without hesitation and ran

continuously at idle power. Due to three bent propeller blades and vibration, a higher power setting was not attempted.

A review of the maintenance records for the airframe and engine revealed no evidence of recent maintenance on the fuel system. The most recent inspection was an annual inspection, completed on January 1, 2015. During that inspection, a pressure test of the fuel system was recorded. At the time of the accident, the engine had accrued 56 hours of operating time since the annual inspection of January 1.

Pilot-rated passenger Information

Certificate:	Private	**Age:**	56,Female
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	January 13, 2014
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	327 hours (Total, all aircraft)		

Pilot Information

Certificate:	Airline transport; Commercial; Flight instructor; Private	**Age:**	47,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 1 Without waivers/limitations	**Last FAA Medical Exam:**	January 12, 2015
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	September 1, 2014
Flight Time:	3700 hours (Total, all aircraft), 546 hours (Total, this make and model), 2680 hours (Pilot In Command, all aircraft), 191 hours (Last 90 days, all aircraft), 80 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	COMMANDER AIRCRAFT CO	**Registration:**	N6566D
Model/Series:	114 B	**Aircraft Category:**	Airplane
Year of Manufacture:	2000	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	14671
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	January 1, 2015 Annual	**Certified Max Gross Wt.:**	3250 lbs
Time Since Last Inspection:	56 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	1091 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Installed	**Engine Model/Series:**	IO-540-T4B5
Registered Owner:	On file	**Rated Power:**	260 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	RDG,343 ft msl	**Distance from Accident Site:**	4 Nautical Miles
Observation Time:	13:54 Local	**Direction from Accident Site:**	130°
Lowest Cloud Condition:	Scattered / 2800 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	10 knots /	**Turbulence Type Forecast/Actual:**	/ None
Wind Direction:	260°	**Turbulence Severity Forecast/Actual:**	/ N/A
Altimeter Setting:	29.84 inches Hg	**Temperature/Dew Point:**	30°C / 12°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Reading, PA (RDG)	**Type of Flight Plan Filed:**	None
Destination:	Reading, PA (RDG)	**Type of Clearance:**	Traffic advisory
Departure Time:	12:50 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	Reading Regional Airport RDG	**Runway Surface Type:**	
Airport Elevation:	343 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 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	40.425834,-76.039169(est)

Administrative Information

Investigator In Charge (IIC):	Hicks, Ralph
Additional Participating Persons:	Tom Savickas; FAA/FSDO; Allentown, PA
Original Publish Date:	March 14, 2016
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=91698