Aviation Investigation Final Report

Location:	Chandler, Arizona	**Accident Number:**	LAX01LA250
Date & Time:	July 18, 2001, 08:43 Local	**Registration:**	N15120
Aircraft:	Piper PA-34-200	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Minor, 1 None
Flight Conducted Under:	Part 91: General aviation - Flight test		

Analysis

A fire erupted in the right engine nacelle during a maintenance check flight following replacement of the engine. The pilot shutoff the engine and feathered the propeller; however, before he could complete the emergency checklist, black smoke began entering the cockpit via a fresh air vent in the leading edge of the wing near the nacelle. The visibility in the cockpit dropped to about 1 foot and the pilot couldn't see outside, or the instrument panel, or any controls. He declared an emergency and opened the pilot's window. He instructed his passenger to crack open the main door; however, his passenger couldn't find the door handles in the dense smoke. After a period of time he got the door cracked open and the smoke cleared. At that point they were down to 300 or 400 feet agl, and he identified an open field in which an emergency landing was made. Examination of the right-hand engine revealed it was mechanically intact; however, a hose-end "B-nut" at the inlet to the engine driven fuel pump exhibited an unusual number of exposed threads. The B-nut was loose and required 1 1/8 turns to finger-tighten and 1 1/4 turns to snug tighten with a wrench. When the B-nut was unscrewed from the fitting, the threads of the fitting and the B-nut itself did not exhibit any cracks or stripped threads. No other mechanical anomalies were found.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The failure of maintenance personnel to properly tighten a fuel line fitting during an engine installation resulting in a fuel leak and fire during the maintenance checkflight. A factor in the accident was inadequate inspection of the installation prior to return to service.

Findings

Occurrence #1: FIRE
Phase of Operation: APPROACH - VFR PATTERN - FINAL APPROACH

Findings
1. FUEL SYSTEM,LINE FITTING - LOOSE
2. (C) MAINTENANCE,INSTALLATION - IMPROPER - OTHER MAINTENANCE PERSONNEL
3. (F) MAINTENANCE,INSPECTION - INADEQUATE - OTHER MAINTENANCE PERSONNEL

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

Occurrence #3: ON GROUND/WATER ENCOUNTER WITH TERRAIN/WATER
Phase of Operation: LANDING - ROLL

Factual Information

On July 18, 2001, at 0843 hours mountain standard time, a Piper PA-34-200, N15120, made an off-airport emergency landing following onset of an engine nacelle fire in flight near Chandler, Arizona. The commercial certificated pilot received minor injuries and the sole passenger was not injured. The airplane was substantially damaged. The local area, post maintenance checkflight was operated by Garrison Aviation, Inc., under 14 CFR Part 91. The airplane departed from Chandler at 0745, and was returning to land when the fire commenced. Visual meteorological conditions prevailed and no flight plan was filed.

The pilot told the Safety Board investigator that the purpose of the flight was to functionally test the aircraft following repairs performed after a landing incident in which the nosewheel collapsed. The repairs to the aircraft included replacement of both engines and propellers. His passenger was a mechanic. The early portion of the flight was routine. The fire occurred after about 1 hour of flying as they were returning to land. Both engines were operating normally. The pilot had reduced the power during the descent and lowered the landing gear while on a 3- or 4-mile straight-in approach. After lowering the landing gear, he advanced the throttles and sensed a loss of power in the right engine by yawing of the aircraft. He did not recall any roughness or other abnormality in the right engine up to that point; however, when he looked at the right engine he saw black smoke coming from under the top cowl seam at the firewall and black streaking on the top of the nacelle. He secured the engine by pulling the throttle to idle, the prop to feather, and the mixture to idle cutoff. When he looked back at the engine, flames were visible on the outboard side of the nacelle and the cabin rapidly filled with black smoke. The visibility in the cockpit dropped to about 1 foot and he couldn't see outside, or the instrument panel, or any controls. He declared an emergency to Chandler air traffic control tower and opened the pilot's window. He instructed his passenger to crack open the main door; however, his passenger couldn't find the door handles in the dense smoke. After a period of time he got the door cracked open and the smoke cleared. At that point they were down to 300 or 400 feet agl, and he identified an open field as an emergency landing site. He reduced power on the left engine, pulled up to fly over power lines, and landed in the field. The airplane encountered a berm during the landing roll, which collapsed the landing gear, and the airplane slid to a stop. As they exited through the door on the right-hand side, flames were still visible from the right engine, accompanied by black smoke. The fire expanded to envelop the right engine nacelle and wing. Fire department trucks arrived soon and extinguished the fire.

The pilot said that, because of the rapidness with which the cabin filled with smoke and the rapidness of subsequent landing events, he never completed the engine shutdown checklist. He never turned off the fuel selector valve or the electric fuel boost pump. He said the fresh air vent had been open at the time of the fire and it draws air in through an inlet in the leading edge of the wing outboard of the right engine. He believed that the smoke entered the cockpit by means of the fresh air vent system. He said that after the event was over his clothes

smelled of avgas.

The airplane was further examined at the facilities of Air Transport Company in Phoenix on July 24, 2001. The right-hand engine was mechanically intact; however, a hose-end "B-nut" at the inlet to the engine driven fuel pump exhibited an unusual number of exposed threads. The B-nut was loose and required 1 1/8 turns to finger-tighten and 1 1/4 turns to snug tighten with a wrench. When the B-nut was unscrewed from the fitting, the threads of the fitting and the B-nut itself did not exhibit any cracks or stripped threads. No other mechanical anomalies were found.

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	22,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 1 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	July 12, 2001
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	March 6, 2001
Flight Time:	492 hours (Total, all aircraft), 26 hours (Total, this make and model), 441 hours (Pilot In Command, all aircraft), 173 hours (Last 90 days, all aircraft), 49 hours (Last 30 days, all aircraft), 10 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N15120
Model/Series:	PA-34-200	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	34-7350022
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	December 27, 2000 Annual	**Certified Max Gross Wt.:**	4200 lbs
Time Since Last Inspection:	78 Hrs	**Engines:**	2 Reciprocating
Airframe Total Time:	5832 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Installed	**Engine Model/Series:**	IO/LIO-360-C1
Registered Owner:	Garrison Aviation inc.	**Rated Power:**	200 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Dawn
Observation Facility, Elevation:	CHD,1243 ft msl	**Distance from Accident Site:**	2 Nautical Miles
Observation Time:	08:43 Local	**Direction from Accident Site:**	40°
Lowest Cloud Condition:	Few / 10000 ft AGL	**Visibility**	40 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.95 inches Hg	**Temperature/Dew Point:**	34°C / 22°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Chandler, AZ (CHD)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	VFR
Departure Time:	07:45 Local	**Type of Airspace:**	Class D

Airport Information

Airport:	Chandler Municipal CHD	**Runway Surface Type:**	Asphalt
Airport Elevation:	1243 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	4L	**IFR Approach:**	
Runway Length/Width:	4395 ft / 75 ft	**VFR Approach/Landing:**	Full stop;Straight-in

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 None	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Minor, 1 None	**Latitude, Longitude:**	33.239574,-111.78057(est)

Administrative Information

Investigator In Charge (IIC):	Parker, Richard
Additional Participating Persons:	DEAN HENNIES; FAA FLT STNDS DIST OFFICE; SCOTTSDALE, AZ CHARLES R LITTLE; THE NEW PIPER AIRCRAFT, INC.; VERO BEACH, FL MARK W PLATT; TEXTRON LYCOMING; WILLIAMSPORT, PA
Original Publish Date:	May 28, 2002
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=52760