# Aviation Investigation Final Report

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| **Location:** | Palm Springs, California | **Accident Number:** | WPR16LA078 |
| **Date & Time:** | March 2, 2016, 13:00 Local | **Registration:** | N63555 |
| **Aircraft:** | Boeing A75N1(PT17) | **Aircraft Damage:** | Substantial |
| **Defining Event:** | Loss of engine power (partial) | **Injuries:** | 1 Serious, 1 Minor |
| **Flight Conducted Under:** | Part 91: General aviation - Personal | | |

## Analysis

The airline transport pilot reported that, shortly after takeoff on the local sightseeing flight, the engine experienced a partial loss of power about 400 ft above ground level. The pilot initiated a turn back to the airport and subsequently landed hard on the runway, substantially damaging the airplane.

During the postaccident engine examination, an obstruction was found in one end of the fuel hose between the gascolator to the carburetor. The firesleeve on the hose was removed, which revealed that the hose entered the fitting at a slight angle that was not visible with the firesleeve in place. To facilitate further examination, the hose was cut close to the obstruction. The inner surface of the hose appeared cut and curled into the hose near the fitting, consistent with the improper assembly of the hose and fitting. It is likely that the curled piece of hose acted as a flapper valve that either restricted or cut off fuel flow to the carburetor. The high demand for fuel during takeoff depleted the supply of fuel in the carburetor and resulted in the loss of power. Although maintenance log entries indicated that the last replacement of the fuel hoses occurred 49 years before the accident, given the condition of the hoses, it is likely that a subsequent replacement was performed but not documented.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

Improper assembly of a fuel hose, which restricted the fuel supply to the carburetor and resulted in a loss of engine power during the initial climb after takeoff.

## Findings

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| **Aircraft** | Fuel distribution - Incorrect service/maintenance |

# Factual Information

## History of Flight

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| **Takeoff** | Loss of engine power (partial) (Defining event) |
| **Emergency descent** | Loss of engine power (partial) |
| **Landing-flare/touchdown** | Hard landing |

On March 2, 2016, about 1300 Pacific standard time, a Boeing A75N1 (PT17), N63555, touched down hard during a forced landing following a loss of engine power during the initial climb at Palm Springs International Airport, Palm Springs, California. The airline transport pilot sustained minor injuries and the passenger was seriously injured. The airplane was substantially damaged. Palm Springs Air Museum Inc. was operating the airplane under the provisions of 14 *Code of Federal Regulations* Part 91. The local sightseeing flight was originating at the time. Visual meteorological conditions prevailed, and no flight plan had been filed.

The pilot reported that the engine lost power passing through 400 ft after takeoff from runway 31L. He saw houses and other obstacles straight ahead and decided to turn around to land on runway 13R. The airplane landed hard on the runway centerline but came to rest aligned about 30° left of the runway heading.

During the initial examination, the forward end of the fuselage sustained crush damage around the front cockpit. The throttle lever in the cockpit would not move due to the damage; all linkages were connected from the cockpit to the carburetor. The mixture lever in the cockpit would not move due to the damage; all linkages were connected from the cockpit to the carburetor. Examination of the wreckage established flight control continuity for all flight controls. Portions of the bottom cylinders, numbers four and five, fractured and separated. A clear blue fluid, consistent with the smell of Avgas, was drained from the gascolator, and a water paste test had no reaction indicating that water contamination was not present. All fittings that could be reached were tight. A black fluid consistent with motor oil was evident on the dipstick. There was no external evidence of catastrophic mechanical malfunction.

A follow-up examination revealed that the exhaust tube coloration was light brown in color.

The air filter was clean. There was no discoloration in the intake tube at the filter.

The crankshaft was rotated using the propeller; there were no metallic sounds or binding. All valves except for the damaged bottom two cylinders moved approximately the same amount of lift in firing order. The gears in the accessory case turned freely. Thumb compression was obtained on all cylinders in firing order except for the two damaged bottom cylinders.

The carburetor was removed and disassembled. The floats were metal; the bowl contained no fluid. The accelerator pump operated without resistance. The throttle lever would not move; the housing was crushed; the butterfly valve was almost vertical (fully open). The mixture lever moved freely from stop to stop.

The carburetor heat arm was crushed at the box, and the rod end at the bellcrank fractured and separated along a jagged and angular plane. The fuel line was removed from the gascolator to the carburetor and nothing drained out from the line. The line was connected back to the gascolator and the fuel selector valve was turned on; blue fluid came out of the line. The line was removed again and an obstruction was seen near one end of the line. The firesleeve was removed on the hose. The hose went into the fitting at a slight angle that was not visible with the firesleeve in place. The line was cut close to the obstruction. The inner surface of the hose appeared cut and curled into the hose at the fitting.

An entry in the maintenance logbooks dated October 20, 1967, recorded that all new gas lines were made. There were no entries after that to indicate any work was performed on the gas line hoses.

## Pilot Information

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| **Certificate:** | Airline transport; Commercial; Flight engineer; Flight instructor | **Age:** | 62,Male |
| **Airplane Rating(s):** | Single-engine land; Single-engine sea; Multi-engine land | **Seat Occupied:** | Rear |
| **Other Aircraft Rating(s):** | Glider; Helicopter | **Restraint Used:** | 4-point |
| **Instrument Rating(s):** | Airplane | **Second Pilot Present:** | No |
| **Instructor Rating(s):** | Airplane multi-engine; Airplane single-engine; Helicopter; Instrument airplane | **Toxicology Performed:** | No |
| **Medical Certification:** | Class 2 With waivers/limitations | **Last FAA Medical Exam:** | January 8, 2016 |
| **Occupational Pilot:** | Yes | **Last Flight Review or Equivalent:** | November 14, 2014 |
| **Flight Time:** | 14388 hours (Total, all aircraft), 35 hours (Total, this make and model), 10000 hours (Pilot In Command, all aircraft), 40 hours (Last 90 days, all aircraft), 25 hours (Last 30 days, all aircraft), 6 hours (Last 24 hours, all aircraft) | | |

## Aircraft and Owner/Operator Information

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| **Aircraft Make:** | Boeing | **Registration:** | N63555 |
| **Model/Series:** | A75N1(PT17) | **Aircraft Category:** | Airplane |
| **Year of Manufacture:** | 1946 | **Amateur Built:** | |
| **Airworthiness Certificate:** | Normal | **Serial Number:** | 75-8014 |
| **Landing Gear Type:** | Tailwheel | **Seats:** | 2 |
| **Date/Type of Last Inspection:** | September 30, 2015 Annual | **Certified Max Gross Wt.:** | 2950 lbs |
| **Time Since Last Inspection:** | | **Engines:** | 1 Reciprocating |
| **Airframe Total Time:** | 9021 Hrs at time of accident | **Engine Manufacturer:** | Continental Motors Inc |
| **ELT:** | Installed, not activated | **Engine Model/Series:** | WR-670-6N |
| **Registered Owner:** | On file | **Rated Power:** | 220 Horsepower |
| **Operator:** | On file | **Operating Certificate(s) Held:** | None |

## Meteorological Information and Flight Plan

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| **Conditions at Accident Site:** | Visual (VMC) | **Condition of Light:** | Day |
| **Observation Facility, Elevation:** | PSP,477 ft msl | **Distance from Accident Site:** | 0 Nautical Miles |
| **Observation Time:** | 12:53 Local | **Direction from Accident Site:** | 0° |
| **Lowest Cloud Condition:** | | **Visibility** | 10 miles |
| **Lowest Ceiling:** | Broken / 20000 ft AGL | **Visibility (RVR):** | |
| **Wind Speed/Gusts:** | / | **Turbulence Type Forecast/Actual:** | / |
| **Wind Direction:** | | **Turbulence Severity Forecast/Actual:** | / |
| **Altimeter Setting:** | 29.96 inches Hg | **Temperature/Dew Point:** | 29°C / -1°C |
| **Precipitation and Obscuration:** | No Obscuration; No Precipitation | | |
| **Departure Point:** | Palm Springs, CA (PSP ) | **Type of Flight Plan Filed:** | None |
| **Destination:** | Palm Springs, CA (PSP ) | **Type of Clearance:** | None |
| **Departure Time:** | 13:00 Local | **Type of Airspace:** | |

## Airport Information

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| **Airport:** | Palm Springs International PSP | **Runway Surface Type:** | Asphalt |
| **Airport Elevation:** | 477 ft msl | **Runway Surface Condition:** | Dry |
| **Runway Used:** | 31L | **IFR Approach:** | None |
| **Runway Length/Width:** | 10000 ft / 150 ft | **VFR Approach/Landing:** | Forced landing |

## Wreckage and Impact Information

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| **Crew Injuries:** | 1 Minor | **Aircraft Damage:** | Substantial |
| **Passenger Injuries:** | 1 Serious | **Aircraft Fire:** | None |
| **Ground Injuries:** | N/A | **Aircraft Explosion:** | None |
| **Total Injuries:** | 1 Serious, 1 Minor | **Latitude, Longitude:** | 33.824443,-116.506668(est) |

## Administrative Information

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| **Investigator In Charge (IIC):** | Plagens, Howard |
| **Additional Participating Persons:** | Ricardo Hernandez; FAA-FSDO; Riverside, CA |
| **Original Publish Date:** | December 18, 2017 |
| **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=92799 |