National Transportation Safety Board
Aviation Accident Final Report

Location:	Austin, Texas	**Accident Number:**	CEN14FA494
Date & Time:	September 10, 2014, 13:26 Local	**Registration:**	N711YM
Aircraft:	Smith AEROSTAR 601P	**Aircraft Damage:**	Destroyed
Defining Event:	Loss of engine power (partial)	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

Witnesses reported observing the airplane flying slowly toward the airport at a low altitude. The left engine was at a low rpm; "sputtering," "knocking," or making a "banging" noise; and trailing black smoke. One witness said that, as the airplane passed over his location, he saw the tail "kick" horizontally to the right and the airplane bank slightly left. The airplane subsequently collided with trees and impacted a field 1/2 mile north of the airport.

Disassembly of the right engine revealed no anomalies, and signatures on the right propeller blades were consistent with power and rotation on impact. The left propeller was found feathered. Disassembly of the left engine revealed that the spark plugs were black and heavily carbonized, consistent with a rich fuel-air mixture; the exhaust tubing also exhibited dark sooting. The rubber boot that connected the intercooler to the fuel injector servo was found dislodged and partially sucked in toward the servo. The clamp used to secure the hose was loose but remained around the servo, the safety wire on the clamp was in place, and the clamp was not impact damaged or bent. The condition of the boot and the clamp were consistent with improper installation. The time since the last overhaul of the left engine was about 1,050 hours. The last 100-hour inspection occurred 3 months before the accident, and the airplane had been flown only 0.8 hour since then. It could not be determined when the rubber boot was improperly installed. Although the left engine had failed, the pilot should have been able to fly the airplane and maintain altitude on the operable right engine, particularly since he had appropriately feathered the left engine.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to maintain sufficient clearance from trees during the single-engine landing approach. Contributing to the accident was the loss of power in the left engine due to an improperly installed rubber boot that became dislodged and was then partially sucked into the fuel injector servo, which caused an excessively rich fuel-air mixture that would not support combustion.

Findings

Aircraft	Fuel distribution - Failure
Personnel issues	Installation - Maintenance personnel
Personnel issues	Monitoring environment - Pilot
Personnel issues	Identification/recognition - Pilot
Aircraft	Altitude - Not attained/maintained
Aircraft	Fuel distribution - Incorrect service/maintenance

Factual Information

HISTORY OF FLIGHT

On September 10, 2014, at 1326 central daylight time, a Smith 601P, N711YM, impacted terrain ½-mile north of the Austin-Bergstrom International Airport (AUS), Austin, Texas. The pilot, the sole occupant on board, was fatally injured. The airplane was destroyed. The airplane was registered to and operated by the pilot under the provisions of 14 Code of Federal Regulations Part 91 as a personal flight. Visual meteorological conditions (VMC) prevailed at the time of the accident, and no flight plan had been filed. The local flight originated from Dallas Executive Airport (RBD), Dallas, Texas, at 1226, and was en route to AUS.

At 1314, when the airplane was just east of the Georgetown Airport (GTU), Georgetown, Texas, the pilot asked for visual flight rules (VFR) flight following services from AUS approach control. Radar contact was established and the pilot was given the AUS weather and was vectored towards runway 17L. Mode C transponder returns indicated the airplane was at an altitude of 6,500 feet. At 1326:29, the pilot was told to contact the control tower. At that time, radar indicated the airplane was just short of runway 17 and travelling at a ground speed of 88 knots. [The airplane's flaps down stall speed is 77 knots indicated airspeed (KIAS), and its flaps up stall speed is 84 KIAS.] The pilot never contacted the tower. At 1341, the tower controller said she did not have radio contact with the airplane but could see smoke north of the airport. Units from the Austin Fire Department, who had responded to earlier reports of a ground cover fire, discovered the wreckage.

The Austin Police Department interviewed six witnesses. The consensus of these interviews was that they saw a slow-flying airplane at low altitude, headed in the direction of the airport. The left engine was at a low rpm and "sputtering, knocking," or making "banging" sounds and trailing black smoke. One witness said that as the airplane passed over his location, he saw the tail "kick" horizontally to the right and the airplane banked slightly to the left. A review of radio communications revealed the pilot never reported an inoperative engine or declared an emergency.

CREW INFORMATION

The 55-year-old pilot held a private pilot certificate with airplane single and multi-engine land ratings. He was not instrument rated. His third class airman medical certificate, dated March 11, 2014, contained the restriction, "Must wear corrective lenses." When the pilot applied for this medical certificate, he estimated his total flight time to be 525 hours. It was calculated that the pilot had accrued 36.8 hours in N711YM. The pilot's logbook was never located.

AIRCRAFT INFORMATION

N711YM (serial number 61P-0215-023), a model 601P, was manufactured by the Ted Smith Aircraft Company, Santa Maria, California, in 1975. On October 30, 1990, the airplane was modified as a Machen Superstar I (700 Aerostar). This entailed the installation of two Lycoming IO-540-S1A5MM intercooled engines [serial number L-13174-48A, (left); L-13175-48A (right)], each rated at 350

horsepower, driving two Hartzell 3-blade, all-metal, constant speed, full feathering propellers (model number HC-C3YR-2, serial number CK4002A, left; CK4001A, right).

According to the previous owner, he and several mechanics spent considerable time maintaining the airplane in pristine condition. But during the 2011 economic downturn, the airplane was taken out of service and sat dormant on an open ramp at Patterson (PTN), Louisiana, for over 2 years. The owner had a cover made to protect the airplane from the elements. The engines were started occasionally. In 2013, he advertised the airplane for sale in Trade-a-Plane. Only a few inquiries were made, indicative of a "very soft" market for twin-engine airplanes. On June 7, 2013, a prospective buyer's mechanic made a pre-purchase inspection of the airplane. The mechanic told his client that some of the engine cowling fasteners were rusty; others were broken. When he removed the lower spark plugs, rusty water poured out. The mechanic terminated his inspection and told his client that the airplane was unairworthy, citing Louisiana's humid environment conducive to metal corrosion.

In October 2013, the pilot approached the owner and offered $47,500, the approximate salvage value, for N711YM. The sale was consummated on December 26, 2013, and a bill of sale was negotiated. The pilot told the seller that he and his mechanic would fly the plane to Lancaster, Texas, on a ferry permit. The seller described the pilot as "a very unusual person in a sense he would not listen to advice." The seller kept reminding the pilot that there were items that needed to be inspected before he could safely fly the airplane. Since it had sat dormant for four years, the seller suggested that the pilot sump all the fuel tanks, which he finally did after much cajoling. He also tested all the spark plugs and verified each plug was firing properly. He then boarded the airplane and took off. The seller watched as the pilot "yanked" the airplane off the runway. He said the engines were not developing full power and were backfiring. The Federal Aviation Administration (FAA) could find no record of a ferry permit being issued for this flight.

On February 6, 2014, the pilot flew the airplane to Mena, Arkansas, where it was stripped, primed, and repainted. The pilot departed Mena on March 24, 2014. On both flights to and from Mena, there were no records of an annual inspection being made or a ferry permit being issued. On May 13, 2014, the altimeter, transponder, and altitude reporting system were inspected and found to comply with FAR 91.411 and 91.413 up to an altitude of 25,000 feet.

A review of the maintenance records revealed an annual inspection was accomplished on June 3, 2010, at a total airframe time of 3,402.2 hours. The Hobbs meter read 1,373.3 hours. On June 10, 2014, four years and 36.0 flight hours later, another annual inspection was performed at a total airframe time of 3,438.2 hours. The Hobbs meter read 1,409.3 hours. At the time of the accident, the Hobbs meter read 1410.2, a difference of 0.8 hours. At the time of the last annual inspection, both engines received 100-hour inspections. Time elapsed since the last major overhaul of the left engine was 1,048.4 hours. Time elapsed since the last major overhaul on the right engine was 178.6 hours. The previous 100-hour inspections were performed on June 3, 2010, at a Hobbs meter time of 1,373.3 hours. The left engine received a major overhaul on November 16, 1992, at a Hobbs meter time of 360.9 hours. The right engine received a major overhaul on January 8, 2008, at a Hobbs meter time of 1,230.7 hours. Both propellers received 100-hour inspections on June 3, 2010, at a Hobbs meter time of 1,409.3 hours.

On July 29, 2014, eight months after purchasing the airplane, the pilot filed for a new registration and it was issued on August 18, 2014.

According to a spokesperson for Jet Center of Dallas, between April 19 and April 30, the pilot based his airplane at RBD, and started leasing community hangar space on May 1, 2014. During this time frame, the airplane was parked in the back of the hangar and did not fly. The first time the pilot flew the airplane was on September 10, 2014, the day of the accident, and the only time he ever purchased fuel was on September 9, 2014, the day before the accident. He had planned to fly on that day but had to cancel due to a dead battery.

METEOROLOGICAL INFORMATION

The following weather observation was recorded at 1403 by the AUS Automated Weather Observing System (AWOS):

Wind, 210 degrees at 9 knots, gusting to 17 knots; visibility, 10 miles; sky condition, 5,000 feet, scattered; temperature, 36; dew point, 21; altimeter, 29.83 inches of mercury.

AERODROME INFORMATION

AUS is located 5 miles southeast of the City of Austin, and is situated at an elevation of 542 feet above mean sea level. Runway 17L-35R was 9,000 feet long and 150 feet wide. It was constructed of concrete and grooved.

WRECKAGE AND IMPACT INFORMATION

The physical address of the accident site was 2400 Cardinal Loop, Travis County, City of Austin. The investigation commenced September 11 and concluded on September 12, 2014. The Austin Police Department's Vehicular Homicide Division assisted in the on-scene examination with the use of their Leica Total Station.

The investigation disclosed the airplane initially struck a large tree as evidenced by numerous freshly shopped branches lying on the ground around the tree's drip line. Wreckage was strewn for approximately 1,300 feet on a magnetic heading of 170 degrees. Approximately 450 feet beyond the first tree strike, a second tree was struck with branches lying on the ground around its drip line. About 300 feet to the right of this tree, or about 800 feet from the initial tree strike, was another large tree. Both wings had been sheared off and pieces of the right wing and propeller were scattered around its base.

About 300 feet to the left and back on the debris centerline were pieces of the wing spar. About 30 feet to the right on open flat ground was the inverted and intact right propeller assembly embedded in the ground. About 30 feet beyond was a tree line was a line of trees, and the inverted cabin and cockpit were suspended in these trees. The left engine and propeller remained attached to the wing stub, and the stub remained attached to the airplane. The separated right engine was located in the gully behind the airplane.

Examination of the cockpit disclosed the altimeter was set to 29.86 inches of mercury. Both throttle, propeller, and mixture controls were full forward. The left tachometer indicated 95 rpm and the right tachometer indicated 2,550 rpm. The flap and landing gear controls were up, and the Hobbs meter indicated 1,410.2 hours.

MEDICAL AND PATHOLOGICAL INFORMATION

According to the autopsy report, the cause of death was "blunt force injuries." The report noted the pilot had focally severe coronary artery atherosclerosis, an enlarged (550 grams) heart, and "remote" myocardial infarction. A review of his FAA medical examinations revealed the pilot had never reported any of these medical issues. His blood pressure was deemed normal on his last FAA medical examination.

According to the toxicology report, the only drugs detected in the pilot were acetaminophen, dextromethorphan, and dextrorphan. Acetaminophen (12 ug/ml, ug/g) was detected in the urine. Dextromethorphan was also detected in the urine but not in femoral blood. According to FAA's drug database, acetaminophen (Tylenol®) is used for the relief of fever, aches and pains. Dextromethorphan (Vicks® DayQuil® & NyQuil®) is a cough suppressant. Dextrorphan is the metabolite.

TESTS AND RESEARCH

On November 13-14, 2014, the engines were disassembled and examined at Air Salvage of Dallas, Lancaster, Texas, under the auspices of the National Transportation Safety Board. The right engine revealed no anomalies that would have precluded the engine from developing power. Signatures on the right propeller blades were consistent with power production and rotation on impact.

The left propeller was examined and found to be in the feathered position. The left engine spark plugs were removed and found to be heavily carbonized and black, consistent with a rich fuel-air mixture. Further examination revealed the rubber boot that connected the intercooler to the fuel injector servo had become dislodged and had been partially sucked in towards the servo. The clamp used to secure the hose was loose but remained around the servo. The safety wire on the clamp was in place and the clamp was not damaged. The exhaust tubing also exhibited dark sooting.

ADDITIONAL INFORMATION

At the time of the accident, the airplane was carrying only one occupant, no cargo, and less than full fuel. The blue line on the airspeed indicator that depicts the best single-engine rate-of-climb airspeed was 118 knots indicated airspeed (KIAS).

History of Flight

Approach	Loss of engine power (partial) (Defining event)
Approach	Collision with terr/obj (non-CFIT)

Pilot Information

Certificate:	Private	**Age:**	55
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	March 11, 2014
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 525 hours (Total, all aircraft), 37 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Smith	**Registration:**	N711YM
Model/Series:	AEROSTAR 601P	**Aircraft Category:**	Airplane
Year of Manufacture:	1975	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	61P-0215-023
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	June 1, 2014 Annual	**Certified Max Gross Wt.:**	
Time Since Last Inspection:	36 Hrs	**Engines:**	Reciprocating
Airframe Total Time:	3438 Hrs as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:	C91A installed, not activated	**Engine Model/Series:**	IO-540-S1A5
Registered Owner:		**Rated Power:**	350 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KAUS,542 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	13:06 Local	**Direction from Accident Site:**	170°
Lowest Cloud Condition:	Scattered / 5000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	9 knots / 17 knots	**Turbulence Type Forecast/Actual:**	/ None
Wind Direction:	210°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.82 inches Hg	**Temperature/Dew Point:**	36°C / 21°C
Precipitation and Obscuration:			
Departure Point:	Dallas, TX (KRBD)	**Type of Flight Plan Filed:**	None
Destination:	Austin, TX (KAUS)	**Type of Clearance:**	VFR
Departure Time:	12:26 Local	**Type of Airspace:**	Class D

Airport Information

Airport:	Austin-Bergstrom International KAUS	**Runway Surface Type:**	Concrete
Airport Elevation:	542 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	17l	**IFR Approach:**	None
Runway Length/Width:	9000 ft / 150 ft	**VFR Approach/Landing:**	Straight-in

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	30.233333,-97.199996(est)

Administrative Information

Investigator In Charge (IIC):	Scott, Arnold
Additional Participating Persons:	Carlos A Balderas; FAA Flight Standards District Office; San Antonio, TX John Butler; Textron Aviation - Lycoming Engines; Arlington, TX
Original Publish Date:	March 24, 2015
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=90059