Aviation Investigation Final Report

Location:	San Antonio, Texas	**Accident Number:**	CEN14LA058
Date & Time:	November 16, 2013, 10:45 Local	**Registration:**	N57DB
Aircraft:	Piper PA 28-140	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (partial)	**Injuries:**	1 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that, after advancing the airplane's throttle to full power for takeoff, the engine produced "normal thrust," the airspeed reached 60 mph, and the tachometer indicated 2,700 rpm. The acceleration was smooth and all indications were normal when the airplane reached rotation. About 600 feet above the ground, the airplane's nose began to lower, the airspeed remained 60 mph, and the tachometer indicated 2,000 rpm. The pilot pitched the nose down to prevent a stall and ensured that the throttle and mixture controls were full forward and that the electric fuel pump was on. He reported to the air traffic controller that the airplane's engine was not producing sufficient power and that he was returning to the runway. Shortly after the radio transmission, the airplane impacted terrain and a tree.

An examination of the airplane's engine revealed a fuel stain on the carburetor inlet, indicating that the airflow through the carburetor had been decreased. The carburetor induction air inlet duct was single-thickness scat-type ducting, which was not the material described for the part, which should have been installed in accordance with a manufacturer's service bulletin. The material appeared to be beyond its normal service life with frayed edges and loose strings, and most of the wire was loose and separated from the duct. Further, the carburetor air inlet duct appeared to have been compressed due to negative air pressure during high engine rpm, which would have restricted the airflow to the engine and reduced the engine power. The No. 2 cylinder and its associated spark plugs contained dark sooting, likely due to the restricted airflow, which resulted in a rich fuel/air mixture inside the cylinder. The airplane was 12 days overdue for an annual inspection; the improper, damaged air duct could have been identified during the inspection.

Probable Cause and Findings

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

A partial loss of engine power after departure due to the collapse of the carburetor air inlet duct, which restricted the airflow to the engine. Contributing to the accident was the overdue annual inspection and the installation of the improper air inlet duct.

Findings

Aircraft	Eng air baffle sec (recip.) - Failure
Aircraft	Eng air baffle sec (recip.) - Capability exceeded
Aircraft	Eng air baffle sec (recip.) - Incorrect service/maintenance
Aircraft	Scheduled maint checks - Not inspected

Factual Information

History of Flight

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

On November 16, 2013, about 1045 central standard time, a Piper PA-28-140 airplane, N57DB, impacted terrain after departure from the Stinson Municipal Airport (KSSF), San Antonio, Texas. The pilot, who was the sole occupant, sustained serious injuries. The airplane sustained substantial damage. The airplane was registered to and operated by a private individual under the provisions of 14 Code of Federal Regulations Part 91 as a personal flight. Visual meteorological conditions prevailed and no flight plan was filed. The flight was originating at the time of the accident and was destined for Pleasanton Municipal Airport (KPEZ), Pleasanton, Texas.

According to the pilot, he proceeded onto the runway and advanced the throttle to full forward. The engine produced "normal thrust", the airspeed reached 60 mph, and the tachometer indicated 2,700 rpm. The pilot noted that the acceleration was smooth and all indications were normal when airplane reached rotation. About 600 feet above the ground the nose of the airplane began to lower, the airspeed was still 60 mph and the tachometer indicated 2,000 rpm. He reported to air traffic control that the airplane's engine was not producing sufficient power and that he would return to the runway. The pilot pitched the nose down to prevent a stall, ensured that the throttle and mixtures controls were full forward and that the electric fuel pump was on. Seconds after the radio transmission, the airplane impacted a creek bank and a tree.

Pilot Information

Certificate:	Private	**Age:**	57
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:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Without waivers/limitations	**Last FAA Medical Exam:**	April 12, 2013
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	January 17, 2012
Flight Time:	583 hours (Total, all aircraft), 231 hours (Total, this make and model), 490 hours (Pilot In Command, all aircraft), 13 hours (Last 90 days, all aircraft), 11 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

The pilot, age 57, held a private pilot certificate with ratings for single engine land and instrument airplane. On April 12, 2013, he was issued a third class medical certificate with no

limitations. The pilot reported that he had accumulated 583 total flight hours, 231 of which we in the make and model of the accident airplane. He completed a flight review on January 17, 2012.

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N57DB
Model/Series:	PA 28-140	**Aircraft Category:**	Airplane
Year of Manufacture:	1969	**Amateur Built:**	
Airworthiness Certificate:	Normal; Utility	**Serial Number:**	28-25595
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	November 4, 2012 Annual	**Certified Max Gross Wt.:**	2150 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	3877 Hrs at time of accident	**Engine Manufacturer:**	LYCOMING
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	O-320-E2A
Registered Owner:	David H Barnhart	**Rated Power:**	150 Horsepower
Operator:	David H Barnhart	**Operating Certificate(s) Held:**	None

The Piper PA 28-140, was a four place, low-wing, single engine, airplane which was manufactured in 1969. The airplane was powered by a 150-horsepower Lycoming O-320-E2A engine which drove a two-blade, metal Sensenich propeller.

On November 4, 2012, at an airplane total time of 3829.82 hours, an annual inspection was completed with no anomalies noted. The airplane was 12 days overdue for an annual inspection.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KSSF,577 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	10:48 Local	**Direction from Accident Site:**	307°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	Broken / 3500 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	10 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	180°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.88 inches Hg	**Temperature/Dew Point:**	26°C / 18°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	San Antonio, TX (SSF)	**Type of Flight Plan Filed:**	None
Destination:	PLEASANTON, TX (PEZ)	**Type of Clearance:**	VFR flight following
Departure Time:	10:20 Local	**Type of Airspace:**	Class D

At 1048, the automated weather report at KSSF reported: wind from 180 degrees at 10 knots, 10 miles visibility, ceiling broken at 3,500 feet, temperature 79 degrees Fahrenheit (F), dew point 64 degrees F and altimeter setting 29.89 inches of mercury.

Airport Information

Airport:	STINSON MUNI SSF	**Runway Surface Type:**	Asphalt
Airport Elevation:	577 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	14	**IFR Approach:**	None
Runway Length/Width:	4128 ft / 100 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious	**Latitude, Longitude:**	29.332777,-98.462501(est)

The airplane impacted a creek bank and a tree on the departure end of runway 14 at KSSF. The airplane came to rest upright. The fuselage was broken apart and twisted right about 90 degrees from the impact with the tree. The engine remained attached to the airframe.

An examination of the airframe revealed that it had been cut in multiple places for recovery and transport, but all airplane parts were accounted for. Flight control cable continuity was verified to all controls except for the cuts made during recovery process. No airframe anomalies were noted that would have precluded normal operation.

A postaccident examination of the engine revealed that the spark plugs in the number 2 cylinder contained dark sooting. The cylinders were borescoped and number 2 cylinder contained sooting and was significantly darker than the other cylinders. The propeller was rotated by hand and compression and suction was observed on all cylinders. The magnetos were removed and manually rotated; each produced a spark from the respective terminals. The exhaust flame diffuser and center baffle were damaged and loose inside the muffler. The exhaust ports were not blocked. The carburetor venturi contained a stain on the inside. The oil screen was not obstructed but contained a significant amount of carbon deposits.

The carburetor induction air inlet duct (air inlet hose) was single thickness scat type ducting. The material had frayed edges, loose strings and most of the wire was loose and separated from the duct. The air duct was not of the same material described for Piper Aircraft part number 99849-4, which should have been installed in accordance with Piper Aircraft Service Bulletin (SB) 356.

Additional Information

Piper Aircraft Service Bulletin (SB) 356

The induction air inlet duct was not of the same material described for Piper Aircraft part number 99849-4, which should have been installed in accordance with Piper Aircraft Service Bulletin (SB) 356, effective September 15, 1972. The purpose of SB 356 was for a more positive inspection and maintenance practices for the induction air inlet duct.

Federal Aviation Administration Special Airworthiness Information Bulletin (SAIB) CE-14-23

On August 6, 2014, the Federal Aviation Administration issued Special Airworthiness Information Bulletin (SAIB) CE-14-23. The SAIB recommended to owners, operators and maintenance personnel or Piper Models PA-28 and others, that the air inlet duct be inspected within the next 25 hours to verify that it is an approver Piper part and does not exhibit any of the following conditions: 1. Broken or loose cords on external surface, 2. Loose or displaced supporting wire, or 3. Signs of wear, perforation, deterioration or collapse. If the duct exhibits any of the conditions or is not an approved Piper part, then it must be replaced with an approved Piper part before the next flight.

Engine Data Monitor Card

The airplane contained an engine data monitoring card which did not contain information pertaining to the accident flight.

Administrative Information

Investigator In Charge (IIC):	Lindberg, Joshua
Additional Participating Persons:	Carlos Gallardo; Federal Aviation Administration; San Antonio, TX John Butler; Lycoming; TX Michael McClure; Piper; TX
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Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=88439