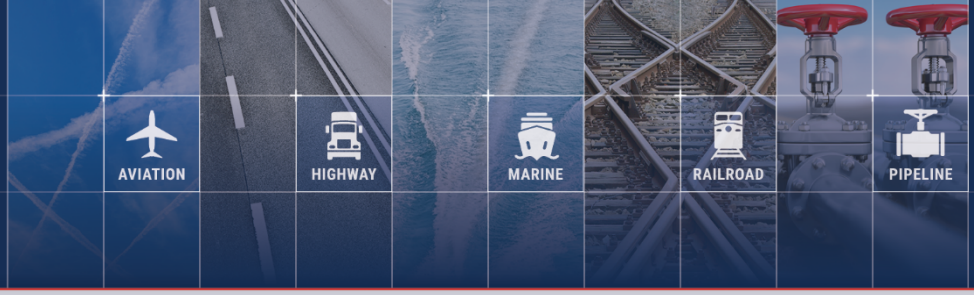

Aviation Investigation Final Report

Location:	Concrete, Washington	**Accident Number:**	WPR09LA022
Date & Time:	October 22, 2008, 22:05 Local	**Registration:**	N97946
Aircraft:	Stinson 108-1	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (partial)	**Injuries:**	1 Fatal, 2 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

For 7 years, the pilot had performed maintenance, which included 100-hour and annual inspections of his airplane's engine. On an undetermined date, a rope-like material had been placed between the exhaust's heater shroud and muffler. At an undetermined date/time, this material became separated from its installed location. During takeoff on the accident flight, the rope-like material became lodged in the carburetor's air intake. This resulted in restricting the flow of air into the carburetor, and the engine lost power. It was a dark night, and the airplane collided with trees during the ensuing forced landing. Toxicology results were consistent with the relatively recent use of diphenhydramine, an over-the-counter antihistamine with sedative and impairing effects, and propoxyphene, a prescription narcotic medication with impairing effects. The levels detected on toxicology evaluation were not consistent with impairment at the time of the accident. The pilot had indicated to the FAA a history of diabetes and kidney stones, but not the use of diphenhydramine or propoxyphene, and it could not be determined whether medical conditions or the use of medication may have played a role in his decision to insert the rope-like material in the engine compartment.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The loss of engine power during initial climb due to the pilot's improper exhaust system maintenance, which resulted in restriction of the carburetor's air intake.

Findings

Aircraft	(general) - Failure
Aircraft	(general) - Incorrect service/maintenance
Personnel issues	(general) - Pilot
Environmental issues	Tree(s) - Contributed to outcome
Environmental issues	(general) - Contributed to outcome

Factual Information

History of Flight

Initial climb	Miscellaneous/other
Prior to flight	Aircraft maintenance event
Initial climb	Loss of engine power (partial) (Defining event)
Emergency descent	Off-field or emergency landing
Emergency descent	Collision with terr/obj (non-CFIT)

HISTORY OF FLIGHT

On October 22, 2008, about 2205 Pacific daylight time, a Stinson 108-1, N97946, experienced a partial loss of engine power during initial climb. Unable to sustain flight, the pilot made a forced landing into tree-covered terrain about 5.2 miles west-southwest of the Concrete Municipal Airport, Concrete, Washington. The airplane was owned and operated by the airline transport certificated pilot, and it was substantially damaged. The pilot was killed, and the two passengers received serious injuries. Visual meteorological conditions prevailed at the time of the dark nighttime flight. The personal flight was performed under the provisions of 14 Code of Federal Regulations Part 91, and no flight plan was filed. The flight originated from Concrete a few minutes prior to the crash.

A family member reported that during the accident flight the pilot was probably heading toward Auburn, Washington, where the airplane was based. Earlier during the day, the pilot and passengers flew to Concrete. At Concrete, the pilot purchased an airplane, which he planned to restore.

The passenger who occupied the front right seat in the airplane reported to an FAA investigator that, seconds prior to the crash, the pilot stated "we are losing power." The passenger also reported that he did not recall hearing the engine backfire or an rpm surge during the flight.

WRECKAGE AND IMPACT INFORMATION

The airplane came to rest within 75 feet of an occupied private residence. The occupants of the residence reported to the National Transportation Safety Board investigator that they observed colored lights from the airplane as it flew passed their home at near tree-top altitude. They described the engine noise as "on and off" and "sputtering or clanking."

The airplane was found to have impacted at least three trees, about 50 feet above ground level, before coming to rest upside down. Fuel was observed in the vicinity of the crash site. There was no fire.

PERSONNEL INFORMATION

The 71-year-old pilot was a retired captain, with experience flying numerous models of airplanes. Prior to retirement, he flew Boeing 747s. According to the Federal Aviation Administration (FAA) on December 17, 2007, when the pilot was issued his last aviation medical certificate, he indicated that his total flight time was 34,100 hours. The pilot's flight time during the preceding 6 months was not indicated.

The pilot held an FAA airframe and powerplant mechanic certificate. He owned, operated, and maintained the accident airplane.

AIRCRAFT INFORMATION

The airplane was manufactured in 1946. It was equipped with a Franklin engine.

Data recorded in the airplane's engine logbook indicated that between 2001 and 2008, the pilot performed maintenance and a series of inspections, variously recorded as 100-hour or annual inspections.

In 2001, the accident airplane's engine tachometer registered 0 hours. On July 30, and October 22, 2008, the tachometer registered 83.0 and 112.6 hours, respectively.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot by Skagit County Coroner's Office, Mount Vernon, Washington. The autopsy findings identified several "blunt force trauma" injuries that the pilot sustained in the airplane crash. The cause of death was reported as "blunt trauma."

The FAA's Bioaeronautical Sciences Research Laboratory, Oklahoma City, Oklahoma, performed forensic toxicology tests on specimens from the pilot. Their toxicology report stated that no ethanol was detected in vitreous, and no cyanide or carbon monoxide was detected in blood. The following drugs were found in various specimens:

Diphenhydramine was detected in blood and urine; ibuprofen was detected in urine; norpropoxyphene was detected in urine and in blood (at a level of 0.043 ug/mL); pioglitazone was detected in blood and urine; and propoxyphene was detected in urine, but not in blood.

The FAA provided a clinical report in which the following was noted: Glucose was detected in urine (805 mg/dl), and glucose was detected in vitreous (41 mg/dl). Also, hemoglobin A1c was detected in blood (7.7 percent). See the clinical report in the docket for additional comments regarding these findings.

The pilot indicated taking several drugs on his last application for an aviation medical

certificate, dated December 17, 2007 (about 10 months prior to the accident flight). On the application form under the question "Do You Currently Use Any Medication (Prescription or Nonprescription)" the pilot responded "Yes." The only drugs he listed were metformin, pioglitazone, and lisinopril. Also on the application under the caption "Medical History," the pilot responded "No" to all items except "Kidney stone or blood in urine," "Diabetes," and "Admission to hospital."

The FAA issued the pilot a medical certificate in the Third Class. The FAA required yearly physical reexaminations for certificate renewal.

TESTS AND RESEARCH

The airplane was initially examined on scene by Safety Board and FAA investigators. In pertinent part, the integrity of the flight control system was confirmed, and the main fuel screen contained fuel that was devoid of debris. The propeller was not found torsionally deformed, and no evidence of chordwise scratches or "s-bending" was present.

The airplane's engine was recovered from the accident site and examined. The FAA inspector reported the following observations:

A foreign object was observed in the airplane's carburetor. The object was protruding out of the top of the carburetor by about 1.5 inches, and it had a rope-like appearance. The air inlet side of the carburetor had the rope-like material wrapped around the fuel discharge nozzle.

The FAA inspector removed the material and measured it. The material's length was about 13 inches. The carburetor's heater muff was then removed from the right-hand exhaust system and examined. It was determined that the rope-like material had been glued to the heater muff to act as a seal/chafe strip between the muffler and the muffler's shroud. The "rope" had been held in place around the muffler, as evidenced by marks on the muffler and the shroud's flange. Indications inside the heater muff showed that the rope had come loose sometime prior to the engine's loss of power. The FAA inspector opined that the pilot had applied carburetor heat after taking off from the Concrete Airport. Thereafter, the rope material came loose, and it was ingested into the carburetor's air inlet thereby restricting airflow to the engine, which resulted in the loss of power.

Pilot Information

Certificate:	Airline transport; Flight engineer	**Age:**	71,Male
Airplane Rating(s):	Single-engine land; Multi-engine land; Multi-engine sea	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	December 17, 2007
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 34100 hours (Total, all aircraft), 113 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Stinson	**Registration:**	N97946
Model/Series:	108-1	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	108-946
Landing Gear Type:	Tailwheel	**Seats:**	4
Date/Type of Last Inspection:	August 2, 2008 Annual	**Certified Max Gross Wt.:**	2100 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	FRANKLIN
ELT:	C91 installed	**Engine Model/Series:**	6A4-150-B3
Registered Owner:	On file	**Rated Power:**	150 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Night/dark
Observation Facility, Elevation:	BLI,170 ft msl	**Distance from Accident Site:**	31 Nautical Miles
Observation Time:	21:53 Local	**Direction from Accident Site:**	285°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	8 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	170°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.14 inches Hg	**Temperature/Dew Point:**	10°C / 6°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Concrete, WA (3W5)	**Type of Flight Plan Filed:**	None
Destination:	Auburn, WA (S50)	**Type of Clearance:**	None
Departure Time:	22:00 Local	**Type of Airspace:**	

Airport Information

Airport:	Concrete Municipal 3W5	**Runway Surface Type:**	Asphalt
Airport Elevation:	267 ft msl	**Runway Surface Condition:**	Unknown
Runway Used:	25	**IFR Approach:**	None
Runway Length/Width:	2609 ft / 60 ft	**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:	2 Serious	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal, 2 Serious	**Latitude, Longitude:**	48.532222,-121.871948

Administrative Information

Investigator In Charge (IIC):	Pollack, Wayne
Additional Participating Persons:	Ellsworth (Duke) Shewell; Federal Aviation Administration; Seattle, WA
Original Publish Date:	November 9, 2009
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=69345