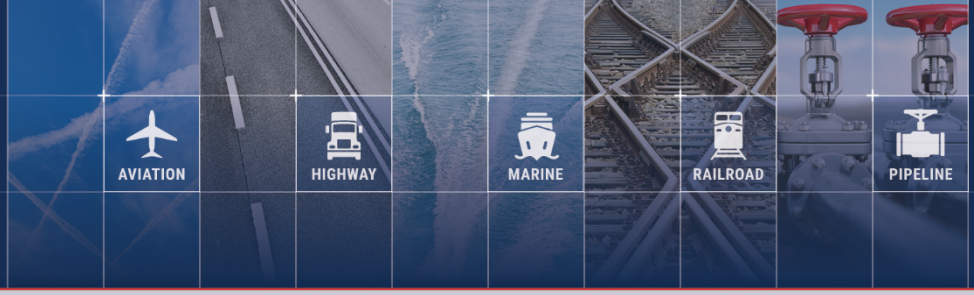

Aviation Investigation Final Report

Location:	Woodbine, New Jersey	**Accident Number:**	ERA09LA368
Date & Time:	June 25, 2009, 18:15 Local	**Registration:**	N300FA
Aircraft:	PITTS AEROBATICS S-2B	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (total)	**Injuries:**	1 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

Prior to departure, the pilot added a total of 20 gallons of fuel to the upper wing auxiliary and lower (main) tanks of the Pitts S-2B bi-plane, filling the tanks to their 28 gallon capacity. About halfway to the destination airport, after flying for about an hour, the pilot transferred fuel from the upper (auxiliary) to the lower (main) fuel tank. As the airplane approached the airport which the pilot planned to stop for fuel, the pilot determined a fuel stop was not necessary as his GPS predicted an arrival time at his destination equating to 2 hours of flight time. When the airplane was about 20 miles from its destination, the engine "quit abruptly" and the pilot performed a forced landing to a field. Examination of the airplane revealed the upper wing fuel tank contained approximately 3-5 gallons of fuel, and no fuel was observed in the main fuel tank. The fuel lines from the fuel servo contained only "residual fuel." The fuel selector was observed in the "ON" position. The fuel transfer valve, which transferred fuel from the upper wing fuel tank to the lower wing (main) fuel tank, was in the "CLOSED" position. The pilot believed the airplane's engine consumed about 11.5 gallons per hour; however, the manufacturer reported the airplane's engine consumed between 12 and 14 gallons per hour.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A loss of engine power due to fuel starvation as a result of the pilot's improper fuel transfer in flight.

Findings

Aircraft	Fuel distribution - Incorrect use/operation
Personnel issues	Incorrect action performance - Pilot
Aircraft	Fuel - Fluid management

Factual Information

History of Flight

Enroute-cruise	Loss of engine power (total) (Defining event)
Emergency descent	Collision with terr/obj (non-CFIT)

HISTORY OF FLIGHT

On June 25, 2009 at 1815 eastern daylight time, a Pitts S-2B, N300FA, was substantially damaged during a forced landing following loss of engine power near Woodbine Airport (OBI), Woodbine, New Jersey. The certificated private pilot received serious injuries. Visual meteorological conditions prevailed, and no flight plan was filed for the flight that originated at Laurence Hanscom Field (BED), Bedford, Massachusetts. The personal flight was conducted under the provisions of Title 14 Code of Federal Regulations Part 91.

The accident airplane and another airplane, an Extra 300L, were a flight of two, destined for Wildwood Airport (WWD), in Wildwood, New Jersey, for an aerobatic competition.

According to the pilot of the accident airplane, prior to departure from BED he fueled the airplane, filling both the main tank and auxiliary tank to capacity. He also performed a preflight inspection on the airplane, which revealed no anomalies. The pilot departed BED around 1600 and flew to the previously-chosen rendezvous point at 3,000 feet above the Minuteman Airfield (6B6), Stow, Massachusetts. Both aircraft then proceeded toward WWD.

The accident pilot reported that he transferred fuel from the auxiliary (upper) tank to the main (lower) tank after flying for about an hour which was about halfway through the planned flight. He followed his normal procedure which was to open the auxiliary tank fuel valve and observe the fuel level in the main tank increase via the sight gauge. After several minutes he closed the auxiliary tank fuel valve.

As the airplane approached Trenton, New Jersey, the GPS unit predicted an arrival at WWD at 1810, making the total flight time just over two hours. The accident pilot decided he did not need to stop for fuel and proceeded toward WWD. About 20 miles from WWD, in the vicinity of the OBI, the airplane's engine "quit abruptly." The pilot attempted unsuccessfully to restart the engine and prepared for a forced landing at OBI. When the airplane descended through 2,000 feet, the pilot realized he would not make the airport and prepared for a forced landing to a field.

The pilot did not remember the impact sequence.

The pilot of the Extra 300L stated that he departed from Lawrence (LWM), Massachusetts

around 1500-1600 and he thought the accident pilot departed Bedford around the same time. They met near Minuteman Airfield (6B6), Stow, Massachusetts at 3,000 feet, in "loose formation" for the flight to WWD. While en route, the aircraft climbed to 8,500 feet and flew direct toward Wildwood, at an airspeed of approximately 175 knots. When they were approximately 40 miles north of WWD, the airplane initiated a descent to 3,000 feet. The pilot of the Extra 300L was flying in trail of the accident pilot and noticed something was wrong when the accident airplane slowed down, and he passed him. The accident airplane began to descend and fly toward OBI. The pilot of the Extra 300L called the accident pilot on the radio and asked him what the problem was; however, there was no response. The pilot of the Extra 300L circled the accident airplane twice, as he continued to descend. When the airplane was approximately 1 mile from OBI, the accident pilot stated over the radio, "I'm not going to make it," and subsequently impacted trees.

The pilot of the Extra 300L could no longer see the aircraft and decided to land at OBI. After landing, he drove to the accident site. When he arrived on scene he asked the accident pilot if he "ran out of fuel." The accident pilot responded, "I think so."

According to the pilot of the Extra 300L, they did not make any fuel stops enroute. He also stated that because his airplane had more fuel onboard than the accident airplane, he let the accident pilot take the lead position. He reported this would allow the accident pilot to land if he needed to refuel.

PERSONNEL INFORMATION

The accident pilot held a private pilot certificate with a rating for airplane single-engine land. His most recent Federal Aviation Administration (FAA) third-class medical certificate was issued on September 27, 2007. At the time of the accident the pilot reported 1,237 hours of total flight experience, 661 of which were in the accident airplane.

AIRCRAFT INFORMATION

The Pitts S-2B was a two-seat biplane, manufactured in 1984, and certified for aerobatic flight. It was powered by a Lycoming AEIO-540-D4A5 series engine. According to the performance specifications from the manufacturer, the useful fuel capacity of the airplane was 28 gallons. The airplane's engine burned between 12 and 14 gallons per hour at best economy mixture.

The pilot stated he believed the airplane burned between 11.2 and 11.7 gallons per hour.

A placard observed in the airplane's cockpit by an FAA inspector after the accident next to the main fuel valve indicated the useable fuel capacity was 23 gallons.

According to personnel at the fixed base operator (FBO) at BED, the pilot purchased 20 gallons of fuel prior to departure on the day of the accident.

The most recent annual inspection was completed on April 16, 2009 at a recorded aircraft total time of 1,240 hours in service.

METEOROLOGICAL INFORMATION

Weather recorded at WWD, at 1755, included wind from 160 degrees at 8 knots, 10 miles visibility, clear skies, temperature 23 degrees C, dew point 17 degrees, and altimeter 29.80 inches mercury.

WRECKAGE AND IMPACT INFORMATION

Examination of the airplane by an FAA inspector revealed substantial damage to the fuselage and wings. The upper wing fuel tank contained approximately 3-5 gallons of fuel, and no fuel was observed in the lower wing (main) fuel tank. The fuel lines from the fuel servo contained "residual fuel." The fuel selector was observed in the "ON" position. The fuel transfer valve, which transferred fuel from the upper wing fuel tank to the lower wing (main) fuel tank, was in the "CLOSED" position.

Pilot Information

Certificate:	Private	**Age:**	60,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Rear
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	September 27, 2007
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	February 14, 2009
Flight Time:	1237 hours (Total, all aircraft), 661 hours (Total, this make and model), 95 hours (Pilot In Command, all aircraft), 19 hours (Last 90 days, all aircraft), 14 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	PITTS AEROBATICS	**Registration:**	N300FA
Model/Series:	S-2B	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Aerobatic; Normal	**Serial Number:**	5055
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	April 16, 2009 Annual	**Certified Max Gross Wt.:**	1700 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	1240 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	AEIO-540
Registered Owner:	NEVILLE HOGAN	**Rated Power:**	260 Horsepower
Operator:	NEVILLE HOGAN	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	WWD,23 ft msl	**Distance from Accident Site:**	13 Nautical Miles
Observation Time:	17:55 Local	**Direction from Accident Site:**	230°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	8 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	160°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.79 inches Hg	**Temperature/Dew Point:**	23°C / 17°C
Precipitation and Obscuration:			
Departure Point:	Bedford, MA (BED)	**Type of Flight Plan Filed:**	None
Destination:	Wildwood, NJ (WWD)	**Type of Clearance:**	None
Departure Time:	15:00 Local	**Type of Airspace:**	

Airport Information

Airport:	Woodbine Municipal OBI	**Runway Surface Type:**	
Airport Elevation:		**Runway Surface Condition:**	
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	Forced landing

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:**	39.214168,-74.796943(est)

Administrative Information

Investigator In Charge (IIC):	Andrews, Jill
Additional Participating Persons:	Peter Mirales; FAA/FSDO; Philadelphia, PA
Original Publish Date:	July 22, 2010
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=74138