

Aviation Investigation Final Report

Location:	Paducah, Kentucky	Accident Number:	IAD05LA074
Date & Time:	June 11, 2005, 10:24 Local	Registration:	N903H
Aircraft:	Waco GXE	Aircraft Damage:	Substantial
Defining Event:		Injuries:	2 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

After purchasing a tailwheel equipped antique biplane, the pilot departed on the first leg of a cross-country flight to his home airport. While attempting to land at an airport for a rest stop, the pilot executed a low power, steep approach to the asphalt runway. During the flare for landing, the airplane touched down early, skipped, became airborne, and touched down a second time. The airplane then swerved to the right, and ground looped, substantially damaging the airplane. Examination of the landing gear revealed that the main landing gear wheels were "toed out" approximately 2-degrees. The tailwheel steering springs that connected the rudder to the tailwheel were "small," and the tailwheel would release to "full swivel" at a steering angle less than that required for full rudder deflection. The pilot believed however; that the airplane could have been controlled during the landing if differential braking was used to correct a significant swerve. He also stated that, had he discovered that the tailwheel would "release steering," he would have had another tailwheel installed before flying the airplane home.

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 directional control during landing resulting in a ground loop and impact with the runway. A factor in the accident was the limited authority of the tailwheel steering system.

Findings

Occurrence #1: LOSS OF CONTROL - ON GROUND/WATER Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings

1. PROPER TOUCHDOWN POINT - NOT OBTAINED - PILOT IN COMMAND

Occurrence #2: LOSS OF CONTROL - ON GROUND/WATER Phase of Operation: LANDING - ROLL

Findings

2. (C) DIRECTIONAL CONTROL - NOT MAINTAINED - PILOT IN COMMAND

Occurrence #3: ON GROUND/WATER ENCOUNTER WITH TERRAIN/WATER Phase of Operation: LANDING - ROLL

Findings

- 3. GROUND LOOP/SWERVE INADVERTENT PILOT IN COMMAND
- 4. (F) LANDING GEAR, STEERING SYSTEM DISENGAGED
- 5. TERRAIN CONDITION RUNWAY

Factual Information

On June 11, 2005, about 1024 central daylight time, a Waco GXE, N903H, was substantially damaged while landing at Barkley Regional Airport (PAH), Paducah, Kentucky. The certificated commercial pilot and passenger were not injured. Visual meteorological conditions prevailed, and no flight plan was filed for the personal flight, which departed Fall Creek Field Airport (TN96), Lebanon, Tennessee, and was conducted under 14 CFR Part 91.

According to the pilot, he had purchased the airplane on June 10, 2005. To help transition to the tail wheel equipped Waco, and to gain experience with the Continental W670 engine, he flew the previous owner's "Navy Stearman" for approximately 30 minutes, with the owner in the front seat. He performed general flight maneuvers including a stall, and several landings at Fall Creek Field Airport's turf runway. The next morning, he once again made a local flight, but this time in the accident airplane. This flight included normal flight maneuvers, slow flight, stalls, a wheel landing, to gain experience in judging the visibility from the cockpit and height above the runway while landing, and a normal three-point landing. He stated that he felt "relatively comfortable" in the airplane, and that it flew well even though the airplane was slightly "out of rig" laterally. It required a small amount of continuous left aileron input, but he stated that this did not seem to affect the airplane handling on landing.

On June 11, 2005, at 0850 the pilot departed Fall Creek Field Airport with one passenger for the first leg of a cross-country flight to the Wichita Kansas area. He had obtained a weather briefing from a Flight Service Station earlier that morning, which indicated that visual meteorological conditions existed through eastern Missouri, but that there were significant thunderstorms in eastern Kansas. Forecasts also predicted light surface winds for the first part of the trip.

Originally, the first planned stop was Cape Girardeau, Missouri, but as he approached Paducah, Kentucky, he decided to make a rest stop at PAH.

According to a Federal Aviation Administration inspector, the pilot executed a low power, steep approach to runway 14, a 3,999-foot long, 150-foot wide, asphalt runway. During the flare for landing, the airplane touched down "early." After touchdown, the airplane "skipped," became airborne, and touched down a second time. The airplane then swerved to the right, and began to ground loop. The left wing contacted the pavement, and the left main landing gear wheel assembly failed. The airplane then turned 360 degrees, and came to rest on the right side of the runway centerline.

During a post accident examination of the airplane, it was discovered that in addition to the left main landing gear assembly, the left lower wing rear spar and ribs had also been damaged along with the right landing gear limit cable and cabane wire attachments. Examination of the landing gear revealed that the main landing gear wheels were "toed out" approximately 2-degrees. Additionally, the tailwheel steering springs that connected the rudder to the tailwheel were "small," such that significant rudder deflection was required to effect tailwheel steering.

Examination of the tailwheel revealed that it would release to "full swivel" at a steering angle less than that required for full rudder deflection, which would result in a loss of tail wheel steering.

The pilot stated that he believed the airplane could have been successfully controlled during the landing if differential braking was immediately used to correct a significant swerve, instead of making an initial attempt with "firm" rudder input. If he had discovered that the tailwheel would "release steering" during his initial evaluation of the airplane, he would have had another tailwheel installed before flying the airplane home.

A weather observation taken at PAH, about 9 minutes after the accident, recorded the winds as 140 degrees at 10 knots, 10 statute miles visibility, broken clouds at 8,000 feet, temperature 77 degrees Fahrenheit, dew point 72 degrees Fahrenheit, and an altimeter setting of 29.96 inches of mercury.

Certificate:	Commercial	Age:	55,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Rear
Other Aircraft Rating(s):	Glider	Restraint Used:	
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 2 With waivers/limitations	Last FAA Medical Exam:	December 1, 2003
Occupational Pilot:	No	Last Flight Review or Equivalent:	June 1, 2004
Flight Time:	2390 hours (Total, all aircraft), 3 hours (Total, this make and model), 2285 hours (Pilot In Command, all aircraft), 9 hours (Last 90 days, all aircraft), 3 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours all aircraft)		

Pilot Information

Aircraft and Owner/Operator Information

Aircraft Make:	Waco	Registration:	N903H
Model/Series:	GXE	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	2037
Landing Gear Type:	Tailwheel	Seats:	2
Date/Type of Last Inspection:	May 1, 2005 Annual	Certified Max Gross Wt.:	2400 lbs
Time Since Last Inspection:	3 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	1949 Hrs at time of accident	Engine Manufacturer:	Continental
ELT:	Installed, not activated	Engine Model/Series:	W670-6N
Registered Owner:	On file	Rated Power:	220 Horsepower
Operator:	On file	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	PAH,410 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	10:33 Local	Direction from Accident Site:	0°
Lowest Cloud Condition:		Visibility	10 miles
Lowest Ceiling:	Broken / 8000 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	10 knots / None	Turbulence Type Forecast/Actual:	/
Wind Direction:	140°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.95 inches Hg	Temperature/Dew Point:	25°C / 22°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Lebanon, TN (TN96)	Type of Flight Plan Filed:	None
Destination:	Paducah, KY (PAH)	Type of Clearance:	None
Departure Time:	08:50 Local	Type of Airspace:	

Airport Information

Airport:	Barkley Regional Airport PAH	Runway Surface Type:	Asphalt
Airport Elevation:	410 ft msl	Runway Surface Condition:	Dry
Runway Used:	14	IFR Approach:	None
Runway Length/Width:	3999 ft / 150 ft	VFR Approach/Landing:	Traffic pattern

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	1 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 None	Latitude, Longitude:	37.060832,-88.773612

Administrative Information

Investigator In Charge (IIC):	Gunther, Todd
Additional Participating Persons:	John Cox; FAA FSDO-01; Louisville, KY
Original Publish Date:	May 30, 2006
Last Revision Date:	
Investigation Class:	<u>Class</u>
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=61672

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