



# National Transportation Safety Board Aviation Accident Data Summary

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<b>Location:</b>	Spokane, WA	<b>Accident Number:</b>	WPR15FA158
<b>Date &amp; Time:</b>	05/07/2015, 1604 PDT	<b>Registration:</b>	N962DA
<b>Aircraft:</b>	PIPER PA 46 350P	<b>Injuries:</b>	2 Fatal
<b>Flight Conducted Under:</b>	Part 91: General Aviation - Flight Test		

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## Analysis

The commercial pilot was departing on a local post-maintenance test flight in the single-engine airplane; Four aileron cables had been replaced during the maintenance. Shortly after takeoff, the airplane began to roll right. As the climb progressed, the roll became more pronounced, and the airplane entered a spiraling dive. The pilot was able to maintain partial control after losing about 700 ft of altitude; he guided the airplane away from the airport and then gradually back for a landing approach. During this period, he reported to air traffic control personnel that the airplane had a "heavy right aileron." As the airplane passed over the runway threshold, it rolled right and crashed into a river adjacent to the runway.

Postaccident examination of the airplane revealed that the aileron balance and drive cables in the right wing had been misrouted and interchanged at the wing root. Under this condition, both the left and right ailerons would have deflected in the same direction rather than differentially. Therefore, once airborne, the pilot was effectively operating with minimal and most likely unpredictable lateral control, which would have been exacerbated by wind gusts and propeller torque and airflow effects.

The sections of the two interchanged cables within the wing were about equal lengths, used the same style and size of termination swages, and were installed into two same-shape and -size receptacles in the aileron sector wheel. In combination, this design most likely permitted the inadvertent interchange of the cables, without any obvious visual cues to maintenance personnel to suggest a misrouting. The maintenance manual contained specific and bold warnings concerning the potential for cable reversal.

Although the misrouting error should have been obvious during the required post-maintenance aileron rigging or function checks, the error was not detected by the installing mechanic. Although the installing mechanic reported that he had another mechanic verify the aileron functionality, that other mechanic denied that he was asked or that he conducted such a check. The mechanic who performed the work also signed off on the inspection; this is allowed per Federal regulations, which do not require an independent inspection by someone who did not perform the maintenance.

The pilot did perform a preflight check; the preflight checklist included confirmation of "proper operation" of the primary flight controls from within the cockpit. Although the low-wing airplane did not easily allow for a differential check of the ailerons during the walk-around, both ailerons could be seen from the pilot's seat; therefore, the pilot should have been able to recognize that the ailerons were not operating differentially.

The accident occurred at the end of the business day, and the airplane had been undergoing maintenance for a longer-than-anticipated period. The airplane's owner was flying in from another part of the country via a commercial airline to pick up the airplane the following morning. The

accident pilot, who was an engineer at the company and typically flew post-maintenance test flights, was assisting with returning the airplane to service. He also had an appointment with an FAA medical examiner the next morning (Friday), and he typically did not work on Fridays. It is likely that the mechanic and pilot felt some pressure to be finished that day so the owner could depart in the morning and the pilot could attend his appointment.

## Flight Events

Prior to flight - Aircraft maintenance event  
Prior to flight - Sys/Comp malf/fail (non-power)  
Takeoff - Loss of control in flight  
Initial climb - Attempted remediation/recovery  
Landing - Loss of control in flight  
Uncontrolled descent - Collision with terr/obj (non-CFIT)

## Probable Cause

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

The mechanic's incorrect installation of two aileron cables and the subsequent inadequate functional checks of the aileron system before flight by both the mechanic and the pilot, which prevented proper roll control from the cockpit, resulting in the pilot's subsequent loss of control during flight. Contributing to the accident was the mechanic's and the pilot's self-induced pressure to complete the work that day.

## Findings

Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Lateral/bank control-Attain/maintain not possible - C  
Personnel issues-Task performance-Maintenance-Repair-Maintenance personnel - C  
Personnel issues-Task performance-Use of equip/info-Aircraft control-Pilot - C  
Personnel issues-Task performance-Inspection-Post maintenance inspection-Maintenance personnel - C  
Personnel issues-Task performance-Inspection-Preflight inspection-Pilot - C  
Environmental issues-Task environment-Pressures/demands-Time/schedule pressure-Effect on personnel - F  
Organizational issues-Support/oversight/monitoring-Oversight-Oversight of maintenance-Maintenance provider

## Pilot Information

<b>Certificate:</b>	Flight Instructor; Commercial	<b>Age:</b>	64
<b>Airplane Rating(s):</b>	Multi-engine Land; Single-engine Land	<b>Instrument Rating(s):</b>	Airplane; Helicopter
<b>Other Aircraft Rating(s):</b>	Helicopter	<b>Instructor Rating(s):</b>	Airplane Single-engine
<b>Flight Time:</b>	(Estimated) 5800 hours (Total, all aircraft), 950 hours (Total, this make and model), 5800 hours (Pilot In Command, all aircraft), 50 hours (Last 90 days, all aircraft), 20 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

## Pilot-Rated Passenger Information

<b>Certificate:</b>	Private	<b>Age:</b>	60
<b>Airplane Rating(s):</b>	Single-engine Land	<b>Instrument Rating(s):</b>	None
<b>Other Aircraft Rating(s):</b>	None	<b>Instructor Rating(s):</b>	None
<b>Flight Time:</b>	(Estimated) 122 hours (Total, all aircraft), 0 hours (Total, this make and model), 122 hours (Pilot In Command, all aircraft), 1 hours (Last 90 days, all aircraft), 1 hours (Last 30 days, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	PIPER	<b>Registration:</b>	N962DA
<b>Model/Series:</b>	PA 46 350P	<b>Engines:</b>	1 Turbo Prop
<b>Operator:</b>	On file	<b>Engine Manufacturer:</b>	Pratt and Whitney
<b>Operating Certificate(s) Held:</b>	None	<b>Engine Model/Series:</b>	PT6-35A
<b>Flight Conducted Under:</b>	Part 91: General Aviation - Flight Test		

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual Conditions	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	KSFF, 1968 ft msl	<b>Weather Information Source:</b>	Weather Observation Facility
<b>Lowest Ceiling:</b>	None	<b>Wind Speed/Gusts, Direction:</b>	7 knots / , 20°
<b>Temperature:</b>	22° C	<b>Visibility</b>	10 Miles
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Spokane, WA (SFF)	<b>Destination:</b>	Spokane, WA (SFF)

## Airport Information

<b>Airport:</b>	FELTS FIELD (SFF)	<b>Runway Surface Type:</b>	Concrete
<b>Runway Used:</b>	22R	<b>Runway Surface Condition:</b>	Dry
<b>Runway Length/Width:</b>	4499 ft / 150 ft		

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Fatal	<b>Aircraft Damage:</b>	Destroyed
<b>Passenger Injuries:</b>	1 Fatal	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Latitude, Longitude:</b>	47.685833, -117.326944		

## Administrative Information

Investigator In Charge (IIC):	Eliott Simpson	Adopted Date:	09/22/2016
Note:	The NTSB traveled to the scene of this accident.		
Investigation Docket:	<a href="http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=91148">http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=91148</a>		

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