Aviation Investigation Final Report

Location:	Pendleton, Oregon	**Accident Number:**	WPR12LA178
Date & Time:	April 21, 2012, 17:17 Local	**Registration:**	N3862C
Aircraft:	Beechcraft Corporation A36TC	**Aircraft Damage:**	Substantial
Defining Event:	Aircraft servicing event	**Injuries:**	1 Serious, 2 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that the airplane had been refueled before the flight and that the fuel had expanded during the day due to heat, which resulted in fuel draining from the vent. The pilot loosened the fuel caps to facilitate draining excess fuel from the tank; however, he forgot to resecure the left-side cap after he finished draining the fuel. Shortly after takeoff, the pilot reported to an air traffic controller that one of the airplane's fuel caps was not secure and requested permission to return to the airport for landing. However, the pilot did not maintain an adequate glidepath during the approach, and the airplane impacted terrain short of the runway. The pilot reported no preimpact mechanical malfunctions or failures with the airplane that would have precluded normal operation. During the impact sequence, the pilot's shoulder harness webbing separated, resulting in a serious injury. Examination showed that the webbing met the original load requirements as specified by the manufacturer, and no photodegradation was evident.

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 an adequate glidepath for landing, which resulted in a collision with terrain short of the runway. Contributing to the accident was the pilot's failure to secure the left-side fuel cap before departure. Contributing to the pilot's injuries was the broken shoulder harness.

Findings

Aircraft	Descent/approach/glide path - Not attained/maintained
Personnel issues	Forgotten action/omission - Pilot
Aircraft	(general) - Inadequate inspection
Aircraft	(general) - Damaged/degraded
Aircraft	(general) - Failure
Personnel issues	(general) - Pilot

Factual Information

History of Flight

Prior to flight	Aircraft servicing event (Defining event)
Landing	Collision with terr/obj (non-CFIT)

On April 21, 2012, at 1717 Pacific daylight time, N3862C, a Beechcraft Corporation A36TC, registered to Hermiston Aviation Inc. and operated by the pilot collided with terrain short of the runway at Eastern Oregon Regional Airport, Pendleton, Oregon. The commercial pilot sustained serious injuries and the two passengers were not injured. The airplane was substantially damaged. The pilot was operating the airplane under the provisions of Title 14 Code of Federal Regulations Part 91. Visual meteorological conditions prevailed and no flight plan was filed.

According to emergency response personnel, the pilot had departed Pendleton and radioed to the air traffic control tower controller that one of the airplane's fuel caps was not secured. The pilot was returning to the airport when the airplane impacted terrain short of runway 16.

The pilot stated that the airplane had been refueled prior to the flight. It was a warm day with the tank full of fuel and the heat resulted in fuel draining from the vent. The pilot loosened the fuel cap to aid in ridding the tank of the excess fuel. Upon departure, the left wing fuel cap departed from the fuel tank. As the pilot returned to land, he did not maintain an appropriate glide path during final approach and the airplane collided with terrain on the approach end of runway 16. The pilot indicated there were no mechanical malfunctions or failures during the flight, and the engine continued to operate until impact with the terrain.

Post accident examination of the airplane revealed that the pilot's shoulder harness separated during the accident sequence resulting in serious injuries. The shoulder harness was dated September of 1980 and was installed when the airplane was manufactured.

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	63,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane single-engine	**Toxicology Performed:**	No
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	April 2, 2012
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	January 30, 2012
Flight Time:	13000 hours (Total, all aircraft), 7500 hours (Total, this make and model), 12600 hours (Pilot In Command, all aircraft), 67 hours (Last 90 days, all aircraft), 15 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beechcraft Corporation	**Registration:**	N3862C
Model/Series:	A36TC	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	EA-227
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	March 14, 2012 Annual	**Certified Max Gross Wt.:**	3650 lbs
Time Since Last Inspection:	10 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	3699 Hrs at time of accident	**Engine Manufacturer:**	Continental
ELT:	C91 installed, activated, did not aid in locating accident	**Engine Model/Series:**	TSIO-520
Registered Owner:	On file	**Rated Power:**	300 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:	PDT,1497 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	18:53 Local	**Direction from Accident Site:**	0°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	50°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	21°C / 12°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Pendleton, OR (PDT)	**Type of Flight Plan Filed:**	None
Destination:	Hermiston, OR (HRI)	**Type of Clearance:**	VFR
Departure Time:	18:00 Local	**Type of Airspace:**	

Airport Information

Airport:	Pendleton PDT	**Runway Surface Type:**	Asphalt
Airport Elevation:	1497 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	16	**IFR Approach:**	None
Runway Length/Width:	4341 ft / 60 ft	**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:	2 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious, 2 None	**Latitude, Longitude:**	45.694999,-118.258056(est)

Tests and Research

The pilot's shoulder harness and lap belt were examined by a metallurgist from the NTSB Materials Laboratory. The separation point on the shoulder harness belt showed that some filaments contained mushroomed ends, consistent with a relatively high loading rate. Under such conditions, the loading of the filament produces heat which softens the filament and causes it to fracture. The shoulder harness was also examined using a Fourier Transform Infrared (FTIR) spectrometer. The test was indicative of negligible photodegradation of the webbing.

Additionally, the restraint system was examined at Beechcraft with a representative from the Federal Aviation Administration. Sections of the shoulder harness were tensile tested and exceeded the proof load strength of 1,666 pounds, with an ultimate static load strength of 2,500 pounds.

Additional Information

The NTSB's safety alert "Check Your Restraints" notes the importance of restraint systems in preventing injuries and provides resources for inspecting restraint systems for wear and damage. The safety alert can be found at http://www.ntsb.gov/doclib/safetyalerts/SA_027.pdf.

Administrative Information

Investigator In Charge (IIC):	Dunks, Kristi
Additional Participating Persons:	Tom Leonetti; Federal Aviation Administration; Portland, OR
Original Publish Date:	June 11, 2014
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=83451