Aviation Investigation Final Report

Location:	Davis, California	**Accident Number:**	GAA16LA525
Date & Time:	September 18, 2016, 09:50 Local	**Registration:**	N76284
Aircraft:	Cessna 120	**Aircraft Damage:**	Substantial
Defining Event:	Loss of control on ground	**Injuries:**	1 Serious, 1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The private pilot of the tailwheel-equipped airplane reported that, during the landing roll, the airplane "began suddenly swerving" and would not respond to opposite rudder inputs. The airplane veered off the runway into a freshly-plowed field where it nosed over and came to rest inverted. The pilot stated there were no mechanical malfunctions or anomalies that would have precluded normal operation of the airplane.

The pilot further reported that, during the noseover, the center seatbelt anchor bracket failed, which resulted in both occupants falling out of their seats once the airplane became inverted.

About 2 years before the accident, in response to a similar accident, the manufacturer issued a service bulletin that called for inspection of the center seat belt bracket to ensure that the latest type (steel) bracket was installed. The service bulletin had not been completed on the accident airplane.

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 the landing roll, which resulted in a runway excursion and noseover. Contributing to the accident was the failure of the seatbelt anchor bracket.

Findings

Aircraft	Directional control - Not attained/maintained
Personnel issues	Aircraft control - Pilot
Aircraft	(general) - Failure
Aircraft	(general) - Inadequate inspection

Factual Information

History of Flight

Landing-landing roll	Loss of control on ground (Defining event)
Landing-landing roll	Nose over/nose down
Landing-landing roll	Miscellaneous/other

On September 18, 2016, about 0950 Pacific daylight time (PDT), a Cessna 120 airplane, N76284, veered off the runway during the landing roll, and nosed over at Yolo County Airport (DWA) in Davis, California. The empennage sustained substantial damage. The pilot sustained minor injuries and the sole passenger sustained serious injuries. The airplane was registered to a private individual, and was operated by the pilot as a visual flight rules (VFR), local, personal flight under the provisions of 14 Code of Federal Regulations Part 91. Visual meteorological conditions prevailed for the flight; no flight plan was filed. The flight originated from DWA, about 0840 PDT.

The pilot of the tailwheel-equipped airplane reported that, during the landing roll, the airplane "began suddenly swerving with increasingly tremendous centrifugal force to the left" and would not respond to opposite rudder inputs. The airplane veered off the runway to the left and into a freshly plowed field. During the runway excursion, the airplane crossed over a dirt trench, and then nosed over.

During the nose over, the center safety belt bracket, which secures the pilot and front seat passenger's seatbelts to the cabin floor failed, and the pilot was released from his seatbelt.

An examination of the restraint system revealed that the aluminum center safety belt bracket, which was likely installed when the airplane was manufactured in 1946, had failed in shearing overstress during the nose over, which resulted in the pilot being released from the restraint system. Examination of the airplane manufacturer's records revealed that shortly after the airplane was manufactured, the manufacturer began installing a steel center safety belt bracket in new production airplanes. (See Materials Laboratory Factual Report in public docket for additional information.)

Following a similar accident (ERA14FA327), the manufacturer issued a service bulletin on February 17, 2015 that called for inspection of the center safety belt bracket on all Cessna 120 and 140 airplanes to determine if the latest type (steel) bracket was installed and replacement of any older type (aluminum) brackets found with the latest type. (See SEB-25-03 in public docket for additional information.)

During a telephone conversation with the mechanic that completed the airplane's annual inspection, he stated that he was unaware of the service bulletin related to the center safety belt bracket.

A review of the FAA aircraft registry database found that approximately 2,145 airplanes, which were manufactured with this center safety belt bracket, were currently registered in the United States.

Of these, about 2,099 (98%) were manufactured before the effectivity of the material change.

Pilot Information

Certificate:	Private	**Age:**	45,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Lap only
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:**	March 1, 2016
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	May 23, 2016
Flight Time:	(Estimated) 119 hours (Total, all aircraft), 5 hours (Total, this make and model), 55 hours (Pilot In Command, all aircraft), 13 hours (Last 90 days, all aircraft), 8 hours (Last 30 days, all aircraft)		

Passenger Information

Certificate:		**Age:**	Female
Airplane Rating(s):		**Seat Occupied:**	Right
Other Aircraft Rating(s):		**Restraint Used:**	Lap only
Instrument Rating(s):		**Second Pilot Present:**	No
Instructor Rating(s):		**Toxicology Performed:**	No
Medical Certification:		**Last FAA Medical Exam:**	
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:			

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N76284
Model/Series:	120 NO SERIES	**Aircraft Category:**	Airplane
Year of Manufacture:	1946	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	10698
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	October 16, 2015 Annual	**Certified Max Gross Wt.:**	1451 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	6259.4 Hrs at time of accident	**Engine Manufacturer:**	Continental
ELT:	C91A installed, not activated	**Engine Model/Series:**	C-85-12F
Registered Owner:	On file	**Rated Power:**	85 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:	KEDU,69 ft msl	**Distance from Accident Site:**	4 Nautical Miles
Observation Time:	16:40 Local	**Direction from Accident Site:**	124°
Lowest Cloud Condition:	Clear	**Visibility**	
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	3 knots /	**Turbulence Type Forecast/Actual:**	/ None
Wind Direction:	80°	**Turbulence Severity Forecast/Actual:**	/ N/A
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	24°C / 9°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Davis, CA (DWA)	**Type of Flight Plan Filed:**	None
Destination:	Davis, CA (DWA)	**Type of Clearance:**	None
Departure Time:	08:40 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	YOLO COUNTY DWA	**Runway Surface Type:**	Asphalt
Airport Elevation:	100 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	34	**IFR Approach:**	None
Runway Length/Width:	6000 ft / 100 ft	**VFR Approach/Landing:**	Full stop;Traffic pattern

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Serious	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious, 1 Minor	**Latitude, Longitude:**	38.572498,-121.856941(est)

Administrative Information

Investigator In Charge (IIC):	Vanover, Jackie
Additional Participating Persons:	Jeff Snider; FAA; Sacramento, CA Andrew L Hall; Textron Aviation; Wichita, KS Dennis Degolia; FAA; Sacramento, CA
Original Publish Date:	March 19, 2018
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=94200