Aviation Investigation Final Report

Location:	Albuquerque, New Mexico	**Accident Number:**	CEN17LA216
Date & Time:	June 4, 2017, 08:24 Local	**Registration:**	N78DZ
Aircraft:	WILLIAM D TELFAIR/ZIA Z TELFAI EXCALIBUR	**Aircraft Damage:**	Substantial
Defining Event:	Flight control sys malf/fail	**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The commercial pilot was conducting a personal flight in the experimental amateur-built airplane. After about 1 hour of flight, the airplane was straight and level, at an airspeed of about 75 mph, when the pitch control became erratic. The pilot stated that the control stick started "slamming" fore and aft to the limits, the airplane nose began pitching up and down, and the airplane began buffeting "like it was going to come apart." The pilot declared an emergency and reduced airspeed to 50 to 60 mph, which slightly lessened the fore-and-aft stick movement and pitch but did not control it. The pilot turned to clear steep terrain and chose a field for an emergency landing. He was able to make final directional corrections and flew the airplane to landing about 40 to 45 mph and 200 to 300 ft per minute rate of descent. The left wing and horizontal stabilizer struck the ground. Examination of the airplane revealed a broken right elevator control rod; the left elevator control rod was not broken and moved normally. The broken control rod was a factory-supplied, 1/2-inch aluminum tube with bearings at each end. The attach points of the control rods appeared to be intact, the bearings were still connected and safety wired, and all other control rod linkages were connected. Further examination revealed no indication of any preexisting failure on the fracture surface of the right elevator control rod. The deformation of the rod was indicative of a bending failure. The pilot reported after the accident that he may have encountered flutter, but it could not be determined when or if that occurred.

Probable Cause and Findings

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

The loss of pitch control due to the overload failure of the control rod.

Findings

Aircraft	Pitch control - Attain/maintain not possible
Aircraft	Elevator control system - Failure

Factual Information

History of Flight

Maneuvering	Flight control sys malf/fail (Defining event)
Emergency descent	Off-field or emergency landing
Emergency descent	Collision with terr/obj (non-CFIT)

On June 4, 2017, about 0824 mountain daylight time, an Excaliber experimental light sport airplane, N78DZ, was substantially damaged when it impacted terrain near Albuquerque, New Mexico, during an emergency landing due to flight control anomalies. The commercial pilot was not injured. Visual meteorological conditions prevailed throughout the area and a flight plan was not filed. The airplane was registered to the pilot and the personal flight was being conducted under the provisions of Title 14 *Code of Federal Regulations* Part 91. The local flight originated at 0715 from the Double Eagle Airport (AEG), Albuquerque, New Mexico, and was enroute back to AEG when the accident occurred.

According to the pilot, he had been flying a little over an hour without any problems since takeoff from AEG. He was flying straight and level, about 75 mph (below never-exceed speed), when the pitch control became erratic. The control stick started "slamming" fore and aft to the limits, the airplane nose began pitching up and down, and the airplane began buffeting "like it was going to come apart." The pilot declared an emergency and reduced airspeed to 50 to 60 mph, which slightly lessened the fore and aft stick movement and pitch, but did not control it. The pilot turned to clear steep terrain and choose a relatively flat field for an emergency landing. He was able to make final directional corrections and flew the airplane to landing about 40 to 45 mph and 200 to 300 ft per minute rate of descent. The airplane remained upright, but the nose gear and the left main gear sheared off, the airplane turned 180°, and the left wing and horizontal stabilizer struck the ground.

Examination of the aircraft by a Federal Aviation Administration inspector and the pilot after the accident revealed a broken, right elevator control rod. The left elevator control rod was not broken. The control rod that separated was a factory-supplied, 1/2-inch aluminum tube with bearings at each end. The attach points of the control rods appeared to be intact. The bearings were still connected and safety wired and all other control rod linkages and attach points were connected. There was normal movement of the left elevator control system (rod still intact). The damaged control rod (right elevator) and the intact control rod (left elevator) were compared and examined by a National Transportation Safety Board structures engineer. According to the engineer, there was no indication of any pre-existing failure on the fracture surface of the right elevator control rod. The deformation of the rod was indicative of a bending failure of the rod.

The pilot reported after the accident that he may have encountered flutter.

Pilot Information

Certificate:	Commercial; Private	**Age:**	79,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Front
Other Aircraft Rating(s):	None	**Restraint Used:**	4-point
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:**	February 23, 2013
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	February 3, 2017
Flight Time:	4978 hours (Total, all aircraft), 64 hours (Total, this make and model), 4800 hours (Pilot In Command, all aircraft), 5 hours (Last 90 days, all aircraft), 5 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	WILLIAM D TELFAIR/ZIA Z TELFAI	**Registration:**	N78DZ
Model/Series:	EXCALIBUR NO SERIES	**Aircraft Category:**	Airplane
Year of Manufacture:	2015	**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	2614
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	April 17, 2017 Condition	**Certified Max Gross Wt.:**	
Time Since Last Inspection:	64 Hrs	**Engines:**	Reciprocating
Airframe Total Time:	64 Hrs at time of accident	**Engine Manufacturer:**	Rotax
ELT:	Not installed	**Engine Model/Series:**	582UL-99
Registered Owner:		**Rated Power:**	65 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:	ABQ,5354 ft msl	**Distance from Accident Site:**	15 Nautical Miles
Observation Time:	08:24 Local	**Direction from Accident Site:**	230°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/ None
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.2 inches Hg	**Temperature/Dew Point:**	18°C / 9°C
Precipitation and Obscuration:			
Departure Point:	Albuquerque, NM (AEG)	**Type of Flight Plan Filed:**	None
Destination:	Albuquerque, NM (AEG)	**Type of Clearance:**	None
Departure Time:	07:15 Local	**Type of Airspace:**	Class E

Airport Information

Airport:	Double Eagle AEG	**Runway Surface Type:**	
Airport Elevation:	5837 ft msl	**Runway Surface Condition:**	Dry
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	35.113887,-106.89083(est)

Administrative Information

Investigator In Charge (IIC):	Lemishko, Alexander
Additional Participating Persons:	Frank Waterhouse; FAA FSDO; Albuquerque, NM
Original Publish Date:	April 13, 2020
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=95324