



Aviation Investigation Final Report

Location:	Wichita Falls, Texas	Accident Number:	CEN16LA336
Date & Time:	August 24, 2016, 18:30 Local	Registration:	N855T
Aircraft:	Beech E-55	Aircraft Damage:	Substantial
Defining Event:	Landing gear not configured	Injuries:	2 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The flight instructor stated that, after the landing gear handle was placed in the gear-down position, he and the student pilot noticed electrical smoke and fumes but no fire. Although they restored electrical power, they were unable to fully extend the landing gear, which resulted in a gear-up landing.

Postaccident examination of the main landing gear retraction actuator assembly revealed a broken snap ring within the manual crank extension housing, which allowed the actuator worm gear to reposition itself beyond the actuator worm sector travel limits. A review of the airplane's maintenance records found no record showing that the landing gear actuator assembly had been repaired/overhauled in accordance with the airplane maintenance manual. According to the maintenance manual, the actuator assembly is to be overhauled or replaced every 2,000 hours for gray- or green-colored assemblies. The assembly that was examined was green. The airplane had a total time of 6,184.5 hours. Given the condition of the landing gear actuator assembly, the operator should have been overhauled or replaced the actuator assembly in accordance with the manual.

Probable Cause and Findings

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

The failure of the landing gear assembly snap ring, which prevented the pilot from being able to extend the landing gear and resulted in a gear-up landing. Also causal was the lack of the assembly's overhaul in accordance with the airplane maintenance manual.

Findings

Aircraft	Gear extension and retract sys - Failure
Aircraft	Gear extension and retract sys - Not serviced/maintained
Personnel issues	Scheduled/routine maintenance - Other
Aircraft	Scheduled maint checks - Not serviced/maintained

Factual Information

History of Flight

Approach	Sys/Comp malf/fail (non-power)
Landing-flare/touchdown	Landing gear not configured (Defining event)

On August 24, 2016, about 1830 central daylight time, a Beech E-55, N855T, impacted the runway surface during a gear-up landing on runway 17 at Sheppard Air Force Base/Wichita Falls Municipal Airport (SPS), Wichita Falls, Texas. The airplane sustained substantial damage to the bottom fuselage structure. The flight instructor and a commercial rated dual student pilot were uninjured. The airplane was registered to and operated by Cobra Kai Inc (dba Cobra Kai Flight Academy) under 14 Code of Federal Regulations Part 141 as an instructional flight that was operating on an instrument flight rules flight plan. Visual meteorological conditions prevailed at the time of the accident. The flight originated from Kickapoo Downtown Airport, Wichita Falls, Texas at 1609 and diverted to SPS.

The flight instructor stated that during an approach for landing, the landing gear selection handle was placed into the gear down position, and "immediately" he and the dual student pilot noticed electrical smoke and fumes, but there was never a fire. The battery and alternator switches were selected to the off position to vent the cockpit. The flight instructor and the pilot restored electrical power and saw the landing gear up and down position indicator lights were not illuminated, and the landing gear circuit breaker was tripped. They were unable to fully extend the landing gear. The manual landing gear crank handle did not engage and spun freely in both directions and they were unable to fully extend the landing gear. They then performed a gear-up landing on runway 17.

Post-accident examination by the Federal Aviation Administration of the main landing gear retraction actuator assembly revealed a broken snap ring within the manual crank extension housing that allowed the actuator worm gear to reposition itself beyond the actuator worm sector travel limits.

There was no airplane maintenance record showing that the landing gear actuator assembly had been repaired/overhauled. The airplane had a total time of 6,184.5 hours.

According to the Baron 55 and 58 Maintenance Manual, section 5-10-00- 601, dated April 1, 2015, TIME LIMITS/MAINTENANCE CHECKS, TIME LIMITS INSPECTION/CHECK, A. Landing Gear states that the actuator assembly is to be overhauled or replaced every 2,000 hours for gray or green colored assemblies. The assembly that was examined was green colored.

Flight instructor Information

Certificate:	Airline transport; Commercial; Flight engineer; Flight instructor	Age:	53, Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	Lap only
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	Toxicology Performed:	No
Medical Certification:	Class 2 With waivers/limitations	Last FAA Medical Exam:	May 16, 2016
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	December 30, 2015
Flight Time:	4940.7 hours (Total, all aircraft), 83.5 hours (Total, this make and model), 3967.1 hours (Pilot In Command, all aircraft), 89.5 hours (Last 90 days, all aircraft), 29.7 hours (Last 30 days, all aircraft), 1.8 hours (Last 24 hours, all aircraft)		

Student pilot Information

Certificate:	Commercial	Age:	41, Male
Airplane Rating(s):	Multi-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Lap only
Instrument Rating(s):	None	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Unknown Unknown	Last FAA Medical Exam:	July 23, 2015
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	2990 hours (Total, all aircraft), 4 hours (Total, this make and model), 1118 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	Registration:	N855T
Model/Series:	E-55	Aircraft Category:	Airplane
Year of Manufacture:	1973	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	TE-928
Landing Gear Type:	Tricycle	Seats:	6
Date/Type of Last Inspection:	July 23, 2016 100 hour	Certified Max Gross Wt.:	5300 lbs
Time Since Last Inspection:		Engines:	2 Reciprocating
Airframe Total Time:	6184.5 Hrs at time of accident	Engine Manufacturer:	Continental
ELT:	C91 installed, not activated	Engine Model/Series:	IO-520-CB
Registered Owner:	COBRA KAI INC	Rated Power:	285 Horsepower
Operator:	COBRA KAI INC	Operating Certificate(s) Held:	Pilot school (141)
Operator Does Business As:	Cobra Kai Flight Academy	Operator Designator Code:	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	SPS,1019 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	17:52 Local	Direction from Accident Site:	
Lowest Cloud Condition:	Few / 6500 ft AGL	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	15 knots /	Turbulence Type Forecast/Actual:	/ None
Wind Direction:	200°	Turbulence Severity Forecast/Actual:	/ N/A
Altimeter Setting:	29.96 inches Hg	Temperature/Dew Point:	35°C / 18°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Wichita Falls, TX (CWC)	Type of Flight Plan Filed:	IFR
Destination:	Wichita Falls, TX (SPS)	Type of Clearance:	IFR;VFR flight following
Departure Time:	16:09 Local	Type of Airspace:	Class D

Airport Information

Airport:	Sheppard Air Force Base/Wichit SPS	Runway Surface Type:	Asphalt
Airport Elevation:	1019 ft msl	Runway Surface Condition:	
Runway Used:	17	IFR Approach:	None
Runway Length/Width:	7021 ft / 150 ft	VFR Approach/Landing:	Full stop;Straight-in

Wreckage and Impact Information

Crew Injuries:	2 None	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 None	Latitude, Longitude:	33.988887,-98.491943(est)

Administrative Information

Investigator In Charge (IIC):	Gallo, Mitchell
Additional Participating Persons:	Steve Miller; Federal Aviation Administration; LBB FSDO; Lubbock, TX
Original Publish Date:	June 5, 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=93902

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