



Aviation Investigation Final Report

Location: Burns Flat, Oklahoma **Accident Number:** CEN20LA292

Date & Time: July 18, 2020, 22:45 Local Registration: N3412C

Aircraft: Beech A23-24 Aircraft Damage: Substantial

Defining Event: Loss of engine power (partial) **Injuries:** 4 None

Flight Conducted Under: Part 91: General aviation - Personal

Analysis

The pilot and his 3 passengers were on a personal night flight when the airplane had a gradual loss of engine power. The pilot was unable to restore engine power and a forced landing was completed to a grass field. The airplane's main landing gear collapsed when the pilot intentionally swerved the airplane to avoid a tree after landing, which resulted in substantial damage to the horizontal stabilizer and both wings.

A postaccident examination revealed that the throttle control rod-end was not connected to the fuel servo throttle linkage. Additionally, the required retaining bolt, washer, and self-locking nut were not located during the investigation. The airplane had accumulated 8.72 flight hours since the last annual inspection, during which the fuel servo had been removed from the engine and overhauled. It is likely that the mechanic who reinstalled the fuel servo did not adequately torque the self-locking nut that secured the retaining bolt, which allowed the self-locking nut to back-off the retaining bolt. The airplane had a partial loss of engine power when the throttle control rod-end disconnected from the unsecured retaining bolt. The pilot did not have the ability to control engine power after the throttle control rod-end disconnected from the fuel servo throttle linkage.

Probable Cause and Findings

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

The mechanic's improper maintenance when he reinstalled the fuel servo during the last annual inspection, which resulted in a loss of engine power during cruise flight when the throttle control rodend disconnected from the fuel servo throttle linkage.

Findings

Aircraft	Power lever - Inoperative
----------	---------------------------

Aircraft Power lever - Incorrect service/maintenance
Aircraft Fasteners - Incorrect service/maintenance

Personnel issues Installation - Maintenance personnel

Page 2 of 7 CEN20LA292

Factual Information

History of Flight

Prior to flight Aircraft inspection event

Enroute-cruise Loss of engine power (partial) (Defining event)

Landing Off-field or emergency landing

On July 18, 2020, about 2245 central daylight time, a Beech A23-24 airplane, N3412V, was substantially damaged when it was involved in an accident near Burns Flat, Oklahoma. The pilot and his 3 passengers were not injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The pilot reported that while established in cruise flight the airplane had a gradual loss of engine power. He was unable to restore engine power by switching fuel tanks, turning on the fuel boost pump, and advancing the throttle, mixture, and propeller controls full forward. The pilot made a forced landing in a grass field. After touchdown the airplane traversed over 3 large terraces, and the main landing gear collapsed when the pilot tried to swerve the airplane to avoid a tree. The horizontal stabilizer and both wings were substantially damaged during the forced landing.

The airplane was examined at the accident site by a Federal Aviation Administration airworthiness inspector. Both wing fuel tanks contained about 25 gallons of 100 low-lead aviation fuel. The throttle control was very loose when moved by hand in the cockpit. A visual examination revealed that the throttle control rod-end was not connected to the fuel servo throttle linkage. (Figure 1) The required retaining bolt, washer, and self-locking nut were not located during the investigation.

Page 3 of 7 CEN20LA292



Figure 1. Throttle control rod-end found disconnected from the fuel servo throttle linkage.

The airplane had accumulated 8.72 flight hours since the last annual inspection that was completed on October 22, 2019. The inspection authorized (IA) mechanic who had completed the annual inspection stated that the fuel servo had been removed from the engine and overhauled in conjunction with the annual inspection. The IA mechanic stated that he personally reinstalled the overhauled fuel servo on the engine, while another individual moved the throttle and mixture controls in the cockpit. The IA mechanic stated that it is his standard practice to connect both the throttle and mixture controls to the fuel servo at the same time. The IA mechanic stated that he likely reused the bolt and washer to connect the throttle control rod-end to the fuel servo throttle linkage, and that it is also possible that he reused the self-locking nut. However, he would not have reused the self-locking nut if it had fully engaged the bolt threads by hand. The IA mechanic stated that he used two wrenches to secure the self-locking nut and that he did not use a torque wrench. A review of the Beech A23-24 Maintenance Manual revealed no specific assembly instructions on how to physically connect the throttle control rod-end to the fuel servo throttle linkage. The Beech A23-24 Illustrated Parts Catalog specified that the throttle control rod-end be attached to the fuel servo throttle linkage with a 169-910021 bolt, AN960-10 washer, and MS20365-1032 self-locking nut.

Page 4 of 7 CEN20LA292

Pilot Information

Certificate:	Private	Age:	27,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:	October 9, 2015
Occupational Pilot:	No	Last Flight Review or Equivalent:	July 3, 2020
Flight Time:	309.6 hours (Total, all aircraft), 8.4 hours (Total, this make and model), 267.6 hours (Pilot In Command, all aircraft), 8.4 hours (Last 90 days, all aircraft), 8.4 hours (Last 30 days, all aircraft), 1.5 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	Registration:	N3412C
Model/Series:	A23-24	Aircraft Category:	Airplane
Year of Manufacture:	1969	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	MA-357
Landing Gear Type:	Tricycle	Seats:	4
Date/Type of Last Inspection:	October 22, 2019 Annual	Certified Max Gross Wt.:	2550 lbs
Time Since Last Inspection:	8.72 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	1717.76 Hrs at time of accident	Engine Manufacturer:	Lycoming
ELT:	C126 installed, not activated	Engine Model/Series:	IO-360-A1B
Registered Owner:	On file	Rated Power:	200 Horsepower
Operator:	On file	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Night/dark
Observation Facility, Elevation:	CSM,1922 ft msl	Distance from Accident Site:	2.5 Nautical Miles
Observation Time:	22:53 Local	Direction from Accident Site:	350°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	17 knots /	Turbulence Type Forecast/Actual:	None / None
Wind Direction:	160°	Turbulence Severity Forecast/Actual:	N/A / N/A
Altimeter Setting:	29.98 inches Hg	Temperature/Dew Point:	28°C / 19°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Elk City, OK (ELK)	Type of Flight Plan Filed:	None
Destination:	Elk City, OK (ELK)	Type of Clearance:	None
Departure Time:	21:00 Local	Type of Airspace:	Class E

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	3 None	Aircraft Fire:	None
Ground Injuries:		Aircraft Explosion:	None
Total Injuries:	4 None	Latitude, Longitude:	35.381668,-99.20111

Page 6 of 7 CEN20LA292

Administrative Information

Investigator In Charge (IIC):	Fox, Andrew
Additional Participating Persons:	James L Wirt; Federal Aviation Administration, Oklahoma City; Oklahoma City, OK
Original Publish Date:	March 18, 2022
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=101629

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, "accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person" (Title 49 Code of Federal Regulations section 831.4). Assignment of fault or legal liability is not relevant to the NTSB's statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 United States Code section 1154(b)). A factual report that may be admissible under 49 United States Code section 1154(b) is available here.

Page 7 of 7 CEN20LA292