



Aviation Investigation Final Report

Location:	Williams, Arizona	Accident Number:	WPR22LA083
Date & Time:	January 26, 2022, 10:55 Local	Registration:	N1HH
Aircraft:	Beech F33A	Aircraft Damage:	Substantial
Defining Event:	Fuel related	Injuries:	1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that, during previous flights, he had observed overheating of two of the engine cylinders, and activation of the auxiliary fuel boost pump had worked to resolve the overheating. Shortly after takeoff on the accident flight, the pilot observed cylinder heating and activated the boost pump, after which the engine lost total power. The pilot performed a forced landing in an open desert field. The airplane landed hard and impacted vegetation during the landing roll, resulting in substantial damage to the airplane.

Data retrieved from the airplane's engine monitoring system showed that the fuel flow rate increased from 23.4 gallons per hour (gph) to 28.7 gph, with a peak fuel flow of 30.8 gph, followed by a sudden decrease. The engine manufacturer recommended that the fuel flow setting should be between 23.2 – 24.9 gph. Both the pilot operating handbook for the airplane and a placard on the auxiliary boost pump indicated that the pump should be off during takeoff and only turned on in the event of a loss of fuel pressure.

It is likely that the pilot's activation of the auxiliary fuel boost pump resulted in excess fuel being delivered to the engine during the initial climb, which resulted in the total loss of engine power.

A postaccident examination of the airframe and engine revealed no evidence of mechanical failures or malfunctions that would have precluded normal operation.

Probable Cause and Findings

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

The pilot's activation of the auxiliary fuel boost pump shortly after takeoff, which resulted in an excess amount of fuel to the engine and a total loss of engine power.

Findings

Aircraft	Fuel pump - Incorrect use/operation
Personnel issues	Incorrect action selection - Pilot

Factual Information

History of Flight

Takeoff	Fuel related (Defining event)
Takeoff	Loss of engine power (total)
Initial climb	Off-field or emergency landing

On January 26, 2022, about 1055 mountain standard time, a Beech F33A airplane, N1HH, was substantially damaged when it was involved in an accident near Williams, Arizona. The pilot sustained minor injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The pilot reported that he departed and turned left to the west. While climbing through about 700 to 800 ft above ground level, the engine lost power and the pilot initiated a right turn back toward the airport. The pilot stated that he realized he was unable to make it to the airport and elected to land in an open desert field. The airplane subsequently landed hard and impacted vegetation during the landing roll. The pilot stated that he had topped off the right fuel tanks before the flight and that the fuel selector was placed to the right main tank position.

On previous flights, the pilot had observed “minor heating” in two of the engine cylinders and informed his mechanic. His mechanic directed him to turn on the fuel boost pump when the pilot observed the overheating, and the pilot stated that this method had “worked great until the day of the accident.” On the day of the accident, the two cylinders began to heat up, and the pilot activated the boost pump. Shortly thereafter, the engine lost total power.

The mechanic reported that the pilot was “in a rush” to take possession of the accident airplane and indicated an urgent desire to fly from Arizona to California. After releasing the airplane, the pilot called and indicated that the airplane “was running great, but cylinder number 2 was still running ‘Hot’.” The mechanic suggested that the pilot note exhaust gas temperature (EGT), cylinder head temperature (CHT), and fuel flow indications and bring the accident airplane in for further maintenance. He did not recall suggesting that the pilot use the auxiliary fuel boost pump during takeoff or climb.

The airplane was equipped with an electric auxiliary fuel boost pump that could be manually activated by the pilot via a cockpit switch. The auxiliary fuel pump placard stated, “Take-off and land with AUX fuel pump off except in case of loss of fuel press.”

The airplane’s pilot operating handbook (POH), section IV, Normal Procedures, Before Take-Off, states, “Auxiliary Fuel Pump – CHECK OFF”.

The airplane was also equipped with an Insight Instrument engine monitoring system. The data showed that, during the accident flight, the fuel flow increased from 23.4 to 28.7 gph with a peak fuel flow of 30.8 gph, followed by a sudden decrease, with a corresponding drop in CHT and EGT. The Continental Motors service information directive (SID) SID97-3F recommended that the fuel flow setting should be between 23.2 – 24.9 gph.

Postaccident examination showed bending and crushing near the roots of both wings. Flight control continuity was established from all primary flight control surfaces to the cockpit controls. There was no evidence of any preaccident mechanical failures or malfunctions with the airplane that would have precluded normal operation.

Pilot Information

Certificate:	Private	Age:	60, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Lap only
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	
Medical Certification:	Class 3 Without waivers/limitations	Last FAA Medical Exam:	January 30, 2020
Occupational Pilot:	No	Last Flight Review or Equivalent:	February 3, 2020
Flight Time:	(Estimated) 1100 hours (Total, all aircraft), 1100 hours (Pilot In Command, all aircraft), 4 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	Registration:	N1HH
Model/Series:	F33A	Aircraft Category:	Airplane
Year of Manufacture:	1975	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	CE-611
Landing Gear Type:	Retractable - Tricycle	Seats:	4
Date/Type of Last Inspection:	December 21, 2021 100 hour	Certified Max Gross Wt.:	
Time Since Last Inspection:	7 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	4156 Hrs	Engine Manufacturer:	Continental Motors
ELT:	Installed, activated, aided in locating accident	Engine Model/Series:	IO-520-BA
Registered Owner:	Andrew Edson	Rated Power:	285 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:	KCMR,6677 ft msl	Distance from Accident Site:	2 Nautical Miles
Observation Time:	10:55 Local	Direction from Accident Site:	176°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	/ 10 knots	Turbulence Type Forecast/Actual:	None / None
Wind Direction:		Turbulence Severity Forecast/Actual:	N/A / N/A
Altimeter Setting:	30.21 inches Hg	Temperature/Dew Point:	3°C / -13°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Williams, AZ (CMR)	Type of Flight Plan Filed:	None
Destination:	Mohave Valley, AZ (A09)	Type of Clearance:	None
Departure Time:	09:55 Local	Type of Airspace:	Class G

Airport Information

Airport:	H A CLARK MEML FLD CMR	Runway Surface Type:	Asphalt
Airport Elevation:	6690 ft msl	Runway Surface Condition:	Dry
Runway Used:	36	IFR Approach:	None
Runway Length/Width:	6003 ft / 100 ft	VFR Approach/Landing:	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Minor	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:		Aircraft Explosion:	None
Total Injuries:	1 Minor	Latitude, Longitude:	35.32816,-112.20261(est)

Administrative Information

Investigator In Charge (IIC):	Gutierrez, Eric
Additional Participating Persons:	Michael McComb; FAA; Las Vegas, NV Jennifer D. Barclay; Textron Aviation, Inc. ; Wichita, KS
Original Publish Date:	August 15, 2023
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=104557

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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](#).