Aviation Investigation Final Report

Location:	Farmington, California	**Accident Number:**	WPR24LA114
Date & Time:	March 16, 2024, 13:20 Local	**Registration:**	N38RK
Aircraft:	MOONEY AIRCRAFT CORP. M20K	**Aircraft Damage:**	Substantial
Defining Event:	Fuel exhaustion	**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that he intended to service the airplane with fuel at the destination airport, which had cheaper fuel and was a short distance away. During the preflight inspection he observed that the low fuel indicator was illuminated for one tank, and the panel gauge for the other indicated it was ¼ full, which he estimated would equate to about 20 about gallons. He cross-checked the levels with the airplanes fuel totalizer system, which indicated 20 gallons of fuel remained.

While enroute, the pilot noticed the fuel gauge level dropping faster than he anticipated, and a short time later the engine lost all power due to fuel exhaustion. The pilot performed a forced landing onto a dirt road in farmland, after maneuvering the airplane under a power line. The airplane struck fence on roll-out and sustained substantial damage to both wings. The pilot and passenger were not injured.

The pilot reported there were no preaccident mechanical failures or malfunctions with the airplane that would have precluded normal operation. The airplanes low fuel indicators illuminate when about 2 ½ gallons of fuel remain in their respective tanks. Each tank holds about 9 gallons of fuel when ¼ full, rather than the 20 gallons the pilot had estimated. The pilot stated that he had mistakenly used the airplanes total fuel capacity of about 76 gallons when making that calculation, rather than half the value that a single tank could hold. He also stated that he may not have properly adjusted the totalizer the last time he serviced the airplane with fuel, hence its reading was not accurate. He stated that because the totalizer and fuel tank gauge readings were similar, due to confirmation bias he concluded that sufficient fuel remained.

The pilot stated that he is risk averse, and conservative in nature and has never departed with the low fuel light on before but, he surmised, the cheaper fuel at the destination likely influenced his decision to proceed with the flight.

Probable Cause and Findings

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

The pilot's improper preflight fuel planning that resulted in the loss of engine power due to fuel exhaustion.

Findings

Personnel issues	Preflight inspection - Pilot
Personnel issues	Fuel planning - Pilot
Personnel issues	Decision making/judgment - Pilot
Aircraft	Fuel - Fluid level

Factual Information

History of Flight

Enroute	Fuel exhaustion (Defining event)
Enroute	Off-field or emergency landing
Landing-landing roll	Collision with terr/obj (non-CFIT)

Pilot Information

Certificate:	Private	**Age:**	58,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	July 2, 2023
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	July 10, 2022
Flight Time:	825.3 hours (Total, all aircraft), 383.7 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	MOONEY AIRCRAFT CORP.	**Registration:**	N38RK
Model/Series:	M20K	**Aircraft Category:**	Airplane
Year of Manufacture:	1986	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	25-1059
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	November 1, 2023 Annual	**Certified Max Gross Wt.:**	2900 lbs
Time Since Last Inspection:	10 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	3378 Hrs as of last inspection	**Engine Manufacturer:**	Continental
ELT:	Installed, not activated	**Engine Model/Series:**	TSIO-360-MB
Registered Owner:	On file	**Rated Power:**	210 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:	KSCK,33 ft msl	**Distance from Accident Site:**	14 Nautical Miles
Observation Time:	12:55 Local	**Direction from Accident Site:**	271°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:		**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	29.99 inches Hg	**Temperature/Dew Point:**	21°C / 2°C
Precipitation and Obscuration:			
Departure Point:	Auburn, CA (AUN)	**Type of Flight Plan Filed:**	None
Destination:	Oakdale, CA (O27)	**Type of Clearance:**	VFR;VFR flight following
Departure Time:	13:06 Local	**Type of Airspace:**	Class E

Airport Information

Airport:	Field NONE	**Runway Surface Type:**	
Airport Elevation:		**Runway Surface Condition:**	
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	37.885117,-120.93498(est)

Administrative Information

Investigator In Charge (IIC):	Simpson, Eliott
Additional Participating Persons:	Michael R McMillen; FAA FSDO; Oakland, CA
Original Publish Date:	October 24, 2024
Last Revision Date:	
Investigation Class:	Class 4
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=193957

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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.