



# Aviation Investigation Final Report

<b>Location:</b>	Oregon, Missouri	<b>Accident Number:</b>	CEN15LA170
<b>Date &amp; Time:</b>	March 10, 2015, 12:15 Local	<b>Registration:</b>	N55000
<b>Aircraft:</b>	Maule M 7-260C	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Loss of engine power (partial)	<b>Injuries:</b>	1 None
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

## Analysis

The airline transport pilot was conducting a cross-country personal flight. The pilot reported that, after climbing the airplane to cruise altitude and leaning the fuel mixture, he noted an unusual engine vibration. He enriched the fuel mixture slightly, and the vibration seemed to lessen. After descending and increasing power to level off, the engine vibration worsened, and he chose to perform a precautionary off-airport landing. During the landing, the landing gear "dug in," and the airplane subsequently nosed over.

Testing of the engine's fuel system components revealed that the fuel servo fuel flow was slightly richer than the specified service limits. However, according to the pilot's report, the initial engine vibration did not occur until he leaned the fuel mixture at cruise altitude, indicating that the slightly rich calibration of the fuel servo likely was not associated with the engine vibration described by the pilot. Based on the available evidence, the reason for the engine vibration could not be determined.

## Probable Cause and Findings

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

Engine vibration for reasons that could not be determined based on the available evidence.

## Findings

**Not determined**

(general) - Unknown/Not determined

# Factual Information

## History of Flight

Enroute-cruise	Loss of engine power (partial) (Defining event)
Landing-landing roll	Nose over/nose down

On March 10, 2015, about 1210 central daylight time, a Maule M7 airplane, N55000, sustained substantial damage when it nosed over during a precautionary landing near Oregon, Missouri, following a partial loss of engine power during cruise flight. The pilot was not injured. The airplane sustained substantial damage to the vertical stabilizer and rudder. The aircraft was registered to Aardvark Aircraft Acquisition LLC and operated by the pilot under the provisions of 14 Code of Federal Regulations Part 91 as a personal flight. Visual meteorological conditions prevailed for the flight, which was not on a flight plan. The flight originated from the North Omaha Airport (3NO), Omaha, Nebraska, about 1125 and was destined for the Rosecrans Memorial Airport (STJ), St Joseph, Missouri.

The pilot reported that after climbing to cruise altitude and leaning the engine he noted an unusual engine vibration. He responded by enriching the fuel mixture slightly above normal and the vibration seemed better. After descending and increasing power to level off, the engine vibration became "much worse", and he elected to perform an off-airport precautionary landing. He stated that the landing was normal but during the landing roll, the main landing gear "dug in" and the airplane nosed over.

Postaccident examination of the airplane did not reveal any preimpact anomalies. The engine fuel servo, flow divider and nozzles were sent to the manufacturer's facility for testing under the direct supervision of NTSB investigators. The flow divider was tested and met all production test standards. The fuel nozzles were not flow tested but did not have any evidence of obstruction. The fuel servo was tested on the manufacturer's flow bench. The measured fuel flow rates were about 1.5 pounds per hour (1/4 gallon per hour) leaner than specified service limits.

## Pilot Information

<b>Certificate:</b>	Airline transport	<b>Age:</b>	70
<b>Airplane Rating(s):</b>	Single-engine land; Multi-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	3-point
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 2 With waivers/limitations	<b>Last FAA Medical Exam:</b>	January 13, 2015
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	18102 hours (Total, all aircraft), 16 hours (Total, this make and model), 12875 hours (Pilot In Command, all aircraft), 61 hours (Last 90 days, all aircraft), 17 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Maule	<b>Registration:</b>	N55000
<b>Model/Series:</b>	M 7-260C 260C	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	2003	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	30031C
<b>Landing Gear Type:</b>	Tailwheel	<b>Seats:</b>	5
<b>Date/Type of Last Inspection:</b>	March 1, 2014 Annual	<b>Certified Max Gross Wt.:</b>	2500 lbs
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	890 Hrs at time of accident	<b>Engine Manufacturer:</b>	LYCOMING
<b>ELT:</b>	Installed, activated	<b>Engine Model/Series:</b>	IO-540 SER
<b>Registered Owner:</b>	On file	<b>Rated Power:</b>	0 Horsepower
<b>Operator:</b>	On file	<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	STJ,827 ft msl	<b>Distance from Accident Site:</b>	20 Nautical Miles
<b>Observation Time:</b>	16:53 Local	<b>Direction from Accident Site:</b>	140°
<b>Lowest Cloud Condition:</b>	Clear	<b>Visibility</b>	7 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	/	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>		<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	30.01 inches Hg	<b>Temperature/Dew Point:</b>	13°C / 6°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	OMAHA, NE (3NO )	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	ST JOSEPH, MO (STJ )	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>	11:25 Local	<b>Type of Airspace:</b>	Class G

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>		<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 None	<b>Latitude, Longitude:</b>	39.986946,-95.144996

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Brannen, John
<b>Additional Participating Persons:</b>	Jim Wesley; FAA- Kansas City FSDO; Kansas City, MO
<b>Original Publish Date:</b>	April 26, 2016
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class</a>
<b>Note:</b>	The NTSB did not travel to the scene of this accident.
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=90864">https://data.nts.gov/Docket?ProjectID=90864</a>

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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](#).