Aviation Investigation Final Report

Location:	TALIHINA, Oklahoma	**Accident Number:**	FTW00LA194
Date & Time:	June 27, 2000, 20:30 Local	**Registration:**	N22166
Aircraft:	Mooney M20R	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

During takeoff, the engine started to 'cough' and would not produce enough power to maintain flight. The pilot landed the single-engine airplane on the remaining runway; however, the airplane overran the runway and impacted a ditch and bushes. The pilot reported that a similar engine event occurred a few weeks prior to the accident, and as a result, a mechanic replaced the engine driven fuel pump. An engine test run was conducted after the accident with the second fuel pump installed. No anomalies were noted during the test run. Both the first and second fuel pumps were inspected, leak checked, and flow tested at the engine manufacturer's facility. The first fuel pump did contain an air leak; however, the second fuel pump, which was installed on the engine at the time of the accident, did not display any anomalies that would have prevented its operation on the airplane. The second fuel pump was reinstalled on the engine, and the engine was reinstalled on the airplane. After redelivery of the airplane, the engine lost power during taxi operations. The mechanic removed and replaced the second fuel pump with a third pump and adjusted the fuel injector settings. The second engine driven fuel pump was tested a second time with similar results as the first test. No anomalies have occurred with the engine since the fuel injector adjustment.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the partial loss of engine power on takeoff, which resulted from incorrect adjustment of the fuel injector system by maintenance personnel.

Findings

Occurrence #1: LOSS OF ENGINE POWER(PARTIAL) - NONMECHANICAL
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings
1. (C) FUEL INJECTION CONTROL/SYSTEM
2. (C) MAINTENANCE,ADJUSTMENT - IMPROPER - OTHER MAINTENANCE PERSONNEL

Occurrence #2: OVERRUN
Phase of Operation: TAKEOFF - ABORTED

Occurrence #3: ON GROUND/WATER ENCOUNTER WITH TERRAIN/WATER
Phase of Operation: TAKEOFF - ABORTED

Findings
3. TERRAIN CONDITION - DITCH

Factual Information

On June 27, 2000, at 2030 central daylight time, a Mooney M20R airplane, N22166, was substantially damaged when it impacted terrain during an aborted takeoff from the Talihina Municipal Airport near Talihina, Oklahoma. The commercial pilot, who was the owner and sole occupant of the airplane, was not injured. Visual meteorological conditions prevailed and a flight plan was not filed for the 14 Code of Federal Regulations Part 91 personal flight. The cross-country flight was originating from the Talihina Municipal Airport at the time of the accident, and was destined for Tulsa, Oklahoma.

During a telephone interview conducted by the NTSB investigator-in-charge (IIC), the pilot stated that he took off from runway 01 and was 3/4 of the way down the length of the runway when the engine started to "cough." The pilot reported that the engine would not produce enough power to sustain flight. He attempted to land the airplane on the remaining length of runway; however, the airplane overran the runway and impacted a ditch and bushes in a marsh area.

The airplane came to rest upright with the nose landing gear collapsed and the right wing tip bent up. The leading edge of the left wing displayed a few dents and the right outboard wing received structural damage to the outboard ribs and the aileron.

The pilot reported that he took delivery of the 2000-model airplane a few weeks before the accident. He added that a few days after acquiring the airplane, the engine lost power while taxiing. The pilot stated that a mechanic discussed the problem with the aircraft manufacturer, removed the engine driven fuel pump (serial number J069918B), and replaced it with a new one (serial number C210014B) on June 9, 2000. The pilot stated that the engine "coughed and sounded the same the day of the accident as it did before the fuel pump was replaced."

On July 19, 2000, representatives from the engine and airframe manufacturers test ran the Teledyne Continental IO-550-G engine at the accident site after replacing the propeller. Present for the examination were the pilot, the engine and aircraft manufacturer representatives, and a certificated aircraft mechanic. According to both representatives, the engine was started and run for 15 minutes at various power settings. A magneto check at 1,800 RPM revealed that the left magneto had a 50-RPM drop and the right magneto had a 65-RPM drop. The maximum takeoff power fuel flow indicated 23.1 gallons/hour. No anomalies were noted during the test run.

The original fuel pump, S/N J069918B, was sent to the manufacturer for testing on October 19, 2000, and was found to have an air leak, which allowed "air [to] be sucked into the inlet causing vapor and the possibility of cavitating the pump outlet."

The airplane was then taken to the Mooney Aircraft Corporation manufacturing facility in Kerrville, Texas, for repairs. In the interim, the engine was sent to Mattituck Aviation in Mattituck, New York, for overhaul. During the overhaul, Mattituck mechanics sent the engine driven fuel pump, S/N C210024B, to the engine manufacturer's facility for a flow test. On November 22, 2000, the fuel pump was inspected, leak tested, and flow tested. The only anomaly noted was the fuel pump calibration, which resulted in a higher discharge pressure than specified by the manufacturer. The engine manufacturer representative stated that the fuel pumps are adjusted on the aircraft and "the pump flow...could have been re-adjusted to meet production specifications." He added that it was a "normal" flow test result. The fuel pump was shipped to Mattituck and the engine was reassembled and shipped to Mooney's facility for placement on N22166.

The airplane, with the original engine installed, was re-delivered to the owner. Upon re-delivery, it was noted that the autopilot trim system malfunctioned. The owner requested that a mechanic test the system. The mechanic stated that while he was taxiing to the runway to test the autopilot system, the engine lost power. He added that the only way the engine would maintain power while on the ground was with the electric boost pump on. The mechanic returned the airplane to the hangar and removed the engine driven fuel pump. The mechanic sent the engine driven fuel pump, S/N C210024B, to the NTSB IIC, and the NTSB IIC took the fuel pump to the manufacturer's facility for testing on March 20, 2001. The fuel pump was inspected, leak tested, and flow tested. No anomalies were noted except the calibration, which resulted in similar discharge pressures as the previous flow test.

According to the pilot, the mechanic received a third engine driven fuel pump from the aircraft manufacturer and installed it on the airplane. The mechanic informed the pilot that he had to readjust the fuel injector settings. According to the pilot, there have been no anomalies with the engine since the third fuel pump replacement and fuel injector adjustment.

Pilot Information

Certificate:	Commercial	**Age:**	46,Male
Airplane Rating(s):	Single-engine land; Single-engine sea	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	January 13, 1999
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	525 hours (Total, all aircraft), 30 hours (Total, this make and model), 432 hours (Pilot In Command, all aircraft), 100 hours (Last 90 days, all aircraft), 35 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Mooney	**Registration:**	N22166
Model/Series:	M20R M20R	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	290225
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	Unknown	**Certified Max Gross Wt.:**	3368 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	44 Hrs	**Engine Manufacturer:**	Continental
ELT:	Installed, activated	**Engine Model/Series:**	IO-550-G
Registered Owner:	PAWEL D. LEWICKI	**Rated Power:**	280 Horsepower
Operator:		**Operating Certificate(s) Held:**	None
Operator Does Business As:		**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	MLC ,770 ft msl	**Distance from Accident Site:**	
Observation Time:	20:53 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Unknown	**Visibility**	10 miles
Lowest Ceiling:	Broken / 3900 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	10°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	26°C / 23°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	(6F1)	**Type of Flight Plan Filed:**	None
Destination:	TULSA , OK (TUL)	**Type of Clearance:**	None
Departure Time:	20:30 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	TALIHINA MUNICIPAL 6F1	**Runway Surface Type:**	Asphalt
Airport Elevation:	687 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	1	**IFR Approach:**	
Runway Length/Width:	3300 ft / 60 ft	**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	34.750511,-95.040199(est)

Administrative Information

Investigator In Charge (IIC):	Charnon, Nicole
Additional Participating Persons:	DONALD COOK; OKLAHOMA CITY , OK
Original Publish Date:	July 10, 2001
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=49619