



Aviation Investigation Final Report

Location:	Furnace Creek, California	Accident Number:	WPR11FA114
Date & Time:	January 29, 2011, 00:00 Local	Registration:	N50BJ
Aircraft:	Mooney M20J	Aircraft Damage:	Substantial
Defining Event:	Loss of engine power (partial)	Injuries:	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

A witness reported observing the airplane take off to the south and stated that the ground operations and takeoff appeared to be normal. The wreckage was located 2 days later on a flat, dry salt lake bed 7 miles south of the departure airport. The surface of the ground was deep jagged salt deposits, with crevasses between 6 and 18 inches deep, and unsuitable for making a successful off-field landing.

During the postaccident engine examination, the single-drive dual magneto was found mounted on the accessory pad and could be easily rotated by hand. The magneto had sustained no apparent impact damage and remained in good condition externally. Further examination of the attachment hardware found all required mounting studs, lock washers, and respective nuts to be in place and undamaged. The magneto clamps, respective magneto flange, and the accessory case interface areas exhibited wear signatures consistent with fretting, which suggested that the clamps were not securely fastened. These signatures were most prominent on the lower clamps and flange area. The magneto flange remained intact and revealed no evidence of cracking. It is likely that this could have produced a partial power loss, which led to the pilot's decision to make an off-airport landing. No other mechanical failures or malfunctions were found that would have precluded normal operation. The airplane had accumulated about 10 hours since the last annual inspection. No maintenance records were located to determine if further maintenance had been performed on the engine since the inspection 5 months prior to the accident.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:
The magneto clamps were not securely fastened to the mount, which led to a partial loss of engine power and a subsequent forced landing on unsuitable terrain.

Findings

Aircraft	Magneto/distributor - Not serviced/maintained
Aircraft	Mounts - Fatigue/wear/corrosion
Environmental issues	Rough terrain - Contributed to outcome

Factual Information

History of Flight

Enroute-climb to cruise	Loss of engine power (partial) (Defining event)
Emergency descent	Loss of engine power (partial)
Landing-flare/touchdown	Collision with terr/obj (non-CFIT)

HISTORY OF FLIGHT

On January 29, 2011, at an undetermined time, a Mooney M20J, N50BJ, impacted terrain near Furnace Creek, California. The owner/pilot was operating the airplane under the provisions of 14 Code of Federal Regulations (CFR) Part 91. The certificated private pilot was fatally injured; the airplane sustained substantial damage by impact forces. The cross-country personal flight departed Furnace Creek between 1430 and 1515 Pacific standard time (PST) with a planned destination of Santa Monica, California. Visual meteorological conditions prevailed, and no flight plan had been filed.

A witness reported that the accident airplane departed from Furnace Creek Airport (L06) between 1430 and 1515 on January 29, 2011, and departed to the south. The witness observed the airplane's ground operations and the takeoff, which appeared normal to him.

The airplane wreckage was not discovered until January 31, 2011, around 0830 PST by National Park personnel. The wreckage was located 7 miles south of the departure airport.

PERSONNEL INFORMATION

The 61-year-old pilot held a private pilot certificate for single-engine land operations and an instrument rating. No personal flight records were located for the pilot. The aeronautical experience listed in this report was obtained from a review of the Federal Aviation Administration (FAA) records on file in the Airman and Medical Records Center located in Oklahoma City, Oklahoma. The pilot reported on his medical application that he had a total flight time of 2,000 hours with 20 hours logged in the last 6 months.

AIRCRAFT INFORMATION

The airplane was a Mooney M20J, serial number 24-0657. No aircraft or engine logbooks could be located. The mechanic A&P/IA that performed the last annual inspection reported that the airplane had a total airframe time of 1,703 hours at the time of the inspection, which was completed on August 11, 2010.

The engine was a Lycoming IO-360-A3B6D, serial number L-19390-51A. Total time recorded

on the engine at the last annual inspection was 1,703.0 hours, and time since major overhaul was estimated to be 150.0 hours. The tachometer read 1,712.8 hours at the accident scene.

WRECKAGE AND IMPACT INFORMATION

The accident site was located on a dry salt lake bed. The surface of the ground was deep jagged salt deposits, with deep crevasses between 6 to 18 inches deep.

A ground surface scar was the first identified point of contact (FIPC) with the remains of the left wing tip navigation light. The debris path was 160 feet in length, along a magnetic heading of 185 degrees. The orientation of the fuselage was 300 degrees.

The airplane appeared to have collided with level terrain in a slightly left bank, nose low attitude. The flaps and landing gear were retracted. The throttle, propeller, and mixture controls were full forward.

The propeller blades exhibited damage signatures consistent with the absorption of rotational forces being applied at the time of impact with terrain. Furthermore, significant rotational blue paint signatures were observed on the spinner bulkhead.

MEDICAL AND PATHOLOGICAL INFORMATION

The Inyo County Coroner completed an autopsy on February 4, 2011. The cause of death was listed as multiple traumatic injuries.

The FAA Civil Aerospace Medical Institute (CAMI), Oklahoma City, performed toxicological testing of specimens of the pilot.

Analysis of the specimens contained no findings for carbon monoxide, cyanide, volatiles.

The report contained the following findings for tested drugs: Rosuvastatin was detected in liver and Urine.

TESTS AND RESEARCH

Investigators examined the wreckage at Aircraft Recovery Service, Littlerock, California, on June 1, 2011.

Examination of the airframe revealed no evidence of pre-impact mechanical malfunction or fire.

Examination of the engine revealed that the engine remained attached to the airframe by the engine mount. The engine had sustained moderate impact energy damage to the forward lower section encompassing the associated accessories and exhaust system components.

Visual examination of the engine revealed no evidence of pre-impact catastrophic mechanical malfunction or fire.

Examination of the single drive dual magneto found that it was mounted on the accessory pad but could be easily rotated by hand. The magneto had sustained no apparent impact energy damage and remained in good condition externally. Examination of the attachment hardware found all required mounting studs, lock washers, and respective nuts to be in place and undamaged.

The magneto was removed to be further examined and tested. The examination found that the proper clamps, gasket, and attachment hardware had been utilized in accordance with Lycoming Service Instruction SI-1508B, dated 12/19/2007, and SAIB NE-08-26R2, dated 04/22/2010.

Examination of the associated magneto clamps, part number 66M19385, revealed the clamps had been contacting the accessory case and magneto flange in a proper configuration; however, the magneto clamps, respective magneto flange, and accessory case interface areas exhibited wear signatures consistent with fretting. These signatures were most prominent on the lower clamps and flange areas. The magneto flange remained intact and revealed no evidence of cracking.

No other abnormalities were noted that would have precluded normal operation.

Pilot Information

Certificate:	Private	Age:	61, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 3 With waivers/limitations	Last FAA Medical Exam:	May 27, 2010
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	2000 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Mooney	Registration:	N50BJ
Model/Series:	M20J	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	24-0657
Landing Gear Type:	Retractable - Tricycle	Seats:	
Date/Type of Last Inspection:	August 11, 2010 Annual	Certified Max Gross Wt.:	3374 lbs
Time Since Last Inspection:	10 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	1713 Hrs at time of accident	Engine Manufacturer:	Lycoming
ELT:	Installed, activated, did not aid in locating accident	Engine Model/Series:	IO-360
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:	Day
Observation Facility, Elevation:	DRA	Distance from Accident Site:	42 Nautical Miles
Observation Time:	14:55 Local	Direction from Accident Site:	90°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	5 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:		Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.96 inches Hg	Temperature/Dew Point:	17°C / -5°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Furnace Creek, CA (L06)	Type of Flight Plan Filed:	None
Destination:	Santa Monica, CA (SMO)	Type of Clearance:	None
Departure Time:		Type of Airspace:	

Airport Information

Airport:	Furnace Creek Airport L06	Runway Surface Type:	
Airport Elevation:	-210 ft msl	Runway Surface Condition:	
Runway Used:		IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Fatal	Latitude, Longitude:	36.363887,-116.866111(est)

Administrative Information

Investigator In Charge (IIC):	Jones, Patrick
Additional Participating Persons:	James Brownell; FAA FSDO; Las Vegas, NV Mark Platt; Lycoming; Mobile, AL
Original Publish Date:	November 5, 2012
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=78248

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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](#).