



National Transportation Safety Board Aviation Accident Final Report

Location:	Immokalee, FL	Accident Number:	MIA04LA050
Date & Time:	02/03/2004, 1015 EST	Registration:	N252WF
Aircraft:	Mooney M20K	Aircraft Damage:	Substantial
Defining Event:		Injuries:	2 Minor

Flight Conducted Under: Part 91: General Aviation - Personal

Analysis

The pilot stated that the airplane was in cruise flight, at an altitude of 4,500 feet, when he detected a slight engine vibration. He noted that the fuel consumption had increased from the usual 12.5 gals/hr to 15.7 gals/hr, at 2,300 rpm and a manifold pressure of 30.00. Shortly thereafter he said the engine ceased operating, and he made a forced landing to the field. During the landing rollout the airplane incurred damage. An FAA airframe and powerplant mechanic with an inspection authorization rating, who responded to the scene of the accident stated that he found the B-nut on the inlet side of the fuel flow divider loose, about one full turn. In addition he said he saw signatures consistent with a leak which originated at the B-nut and ran down the right front of the engine case. Follow-on examination of the accident airplane revealed that at the connection of the B-nut on the fuel inlet line to the manifold, there was torque putty on the threaded connection on the manifold side, and no putty was observed on the B-nut. In addition, when conditions were recreated and the engine given a test run, when the electric fuel boost pump turned on, fuel leaked from around the B-nut. According to the airplane's engine log book, the engine had been rebuilt by Teledyne Continental Motors, and shipped to Mod Works Inc., Punta Gorda, Florida, who installed it in the accident airplane on March 03, 2003. At the time of the accident the engine had accumulated a total time of 80 hours since installation, and had received two previous oil changes, all of which had been performed by Mod Works Inc.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A loss of engine power due to the airplane mechanic's improper maintenance/installation and failure to ensure that the B-nut on the inlet side of the fuel manifold was properly tightened, which resulted in a fuel leak, and fuel starvation.

Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - MECH FAILURE/MALF
Phase of Operation: CRUISE - NORMAL

Findings

1. (C) MAINTENANCE,INSTALLATION - IMPROPER - OTHER MAINTENANCE PERSONNEL
 2. FUEL SYSTEM,LINE FITTING - LOOSE PART/BOLT/NUT/CLAMP/ETC
 3. FLUID,FUEL - LEAK
 4. FLUID,FUEL - STARVATION
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Occurrence #2: FORCED LANDING
Phase of Operation: EMERGENCY DESCENT/LANDING

Occurrence #3: ON GROUND/WATER ENCOUNTER WITH TERRAIN/WATER
Phase of Operation: EMERGENCY LANDING

Findings

5. TERRAIN CONDITION - PLOWED/FURROWED

Factual Information

HISTORY OF FLIGHT

On February 3, 2004, about 1015, eastern standard time, a Mooney M-20K, N252WF, registered to and operated by a private individual as a Title 14 CFR Part 91 personal flight, made a forced landing in a potato field, about 7 miles east of Immokalee Airport, Immokalee, Florida. Visual meteorological conditions prevailed, and no flight plan was filed. The private-rated pilot and one passenger received minor injuries, and the airplane incurred substantial damage. The flight originated at Kendall-Tamiami Airport, Miami, Florida, the same day, about 0945.

The pilot stated that he was en route to Punta Gorda, Florida, to the Mooney maintenance facility where he has his airplane serviced, to have a 25-hr oil change performed. He further stated that the airplane was in cruise flight, at an altitude of 4,500 feet, when he detected a slight engine vibration. He noted that the fuel consumption had increased from the usual 12.5 gals/hr to 15.7 gals/hr, at 2,300 rpm and a manifold pressure of 30.00. He said that the characteristics he noted at that time were similar to those of a partially plugged fuel injector he had encountered in the past, and since he was half the distance to Punta Gorda, he elected to continue. Shortly thereafter he said the engine ceased operating. He said there were no sputtering or other noises, the engine just abruptly ceased operating, while the propeller continued to windmill. He said he established the proper glide attitude, while looking for a place to land. He said he switched fuel tanks, turned on the boost pump, and attempted to restart the engine, but it did not restart. At an altitude of about 3,000 feet, he said he noticed a field with long furrows, and after declaring an emergency and performing prelanding tasks, made a forced landing to the field. During the landing rollout the airplane incurred damage.

An FAA airframe and powerplant mechanic with an inspection authorization rating, who responded to the scene of the accident stated that he found the B-nut on the inlet side of the fuel flow divider loose, about one full turn. In addition he said he saw signatures consistent with a leak which originated at the B-nut and ran down the right front of the engine case.

On February 10, 2004, the NTSB conducted a follow-on examination of the accident airplane. Assisting the NTSB was a representative from Teledyne Continental Motors, as well as the airplane mechanic who had responded to the scene of the accident, and had witnessed the loose B-nut on the inlet side of the fuel flow divider. The examination revealed that the fuel manifold was properly positioned, and there were no anomalies noted with the unit. In addition, when the fuel manifold was opened, the screen was found to be clean and fuel was present. At the connection of the B-nut on the fuel inlet line to the manifold, torque putty was noted on the threaded connection on the manifold side, and no putty was observed on the B-nut. In addition, the engine was given an initial test run and no anomalies were noted. The B-nut was then placed in the position it was found at the accident scene, and the engine tested a second time, and during the test run, when the electric fuel boost pump turned on, fuel poured from around the B-nut.

TESTS AND RESEARCH

The accident airplane was equipped with a Teledyne Continental Motors TSIO-360-MB2B, 210 horsepower engine, serial number 279325-R. According to the airplane's engine log book, the engine had been rebuilt by Teledyne Continental Motors, and shipped to Mod Works Inc.,

Punta Gorda, Florida, who installed it in the accident airplane on March 03, 2003. According to the engine logbook, at the time of the accident the engine had accumulated a total time of 80 hours since installation, and had received two previous oil changes, all of which had been performed by Mod Works Inc.

Pilot Information

Certificate:	Private	Age:	68, Male
Airplane Rating(s):	Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim.	Last FAA Medical Exam:	11/18/2002
Occupational Pilot:		Last Flight Review or Equivalent:	04/22/2002
Flight Time:	1800 hours (Total, all aircraft), 1560 hours (Total, this make and model), 1800 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Mooney	Registration:	N252WF
Model/Series:	M20K	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	25-1189
Landing Gear Type:	Retractable - Tricycle	Seats:	4
Date/Type of Last Inspection:	03/03/2003, Annual	Certified Max Gross Wt.:	2900 lbs
Time Since Last Inspection:	80 Hours	Engines:	1 Reciprocating
Airframe Total Time:	1680 Hours at time of accident	Engine Manufacturer:	Teledyne Continental
ELT:	Installed, activated, aided in locating accident	Engine Model/Series:	TSIO-360-MB2B
Registered Owner:	George M. Darnell	Rated Power:	210 hp
Operator:	George M. Darnell	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	APF, 9 ft msl	Distance from Accident Site:	28 Nautical Miles
Observation Time:	0953 EST	Direction from Accident Site:	218°
Lowest Cloud Condition:	Clear	Visibility	10 Miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	/	Turbulence Type Forecast/Actual:	/
Wind Direction:		Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.15 inches Hg	Temperature/Dew Point:	21° C / 15° C
Precipitation and Obscuration:			
Departure Point:	Miami, FL (TMB)	Type of Flight Plan Filed:	None
Destination:	Punta Gorda, FL (PGD)	Type of Clearance:	VFR Flight Following
Departure Time:	0945 EST	Type of Airspace:	Class E

Wreckage and Impact Information

Crew Injuries:	1 Minor	Aircraft Damage:	Substantial
Passenger Injuries:	1 Minor	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 Minor	Latitude, Longitude:	26.433056, -81.401111

Administrative Information

Investigator In Charge (IIC):	John W Lovell	Report Date:	09/13/2005
Additional Participating Persons:	Lorenzo Valerio; FAA FSDO; Miami, FL		
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubinq@ntsb.gov , or at 800-877-6799. Dockets released after this date are available at http://dms.nts.gov/pubdms/ .		

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).