Aviation Investigation Final Report

Location:	LAKEPORT, California	**Accident Number:**	LAX99LA276
Date & Time:	August 20, 1999, 15:10 Local	**Registration:**	N6022Q
Aircraft:	Mooney M20E	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Serious
Flight Conducted Under:	Part 91: General aviation		

Analysis

The airplane's engine lost power during takeoff climb out on a post maintenance check flight, which was performed following repair of damage caused by a gear-up landing. Among other repairs, the engine had been removed, inspected, and reinstalled. The pilot reported that soon after takeoff, while passing the departure end of the runway, the engine started losing power and running rough. He started a turn, intending to land downwind on the departure runway using the partial engine power available. During the turn the engine ceased producing power completely. Because of low airspeed and altitude, the pilot was unable to glide the aircraft to the runway and crashed in a vineyard. An FAA inspector examined the engine and reported there was a loose B-nut on a fuel injection system hose where the hose attached to the fuel divider on top of the engine. When the electric fuel pump was turned on fuel sprayed from the loose B-nut. The inspector reported that the B-nut required about one turn in the tightening direction to reach the snug position. No other discrepancies were noted. The engine was installed on a test stand and run. With the B-nut tight, the engine was started and ran smoothly. The engine was accelerated to full power and smoothly produced about 2,700 rpm. After about 5 minutes at full throttle, the B-nut was loosened. After 1/8 of a turn fuel came out of the hose end. After 1/4 turn the engine began to run rough and between 1/4 and 1/2 turn the engine abruptly stopped.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The failure of engine shop maintenance personnel to tighten the fuel line fitting during assembly of the engine, and failure of the installing maintenance personnel to detect and tighten the loose fitting during the engine installation and annual inspection.

Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - MECH FAILURE/MALF
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings
1. FUEL SYSTEM,LINE FITTING - LOOSE
2. (C) MAINTENANCE,INSTALLATION - IMPROPER - OTHER MAINTENANCE PERSONNEL
3. (C) MAINTENANCE,ANNUAL INSPECTION - INADEQUATE - COMPANY MAINTENANCE PERSONNEL

Occurrence #2: FORCED LANDING
Phase of Operation: EMERGENCY LANDING AFTER TAKEOFF

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings
4. TERRAIN CONDITION - CROP

Factual Information

On August 20, 1999, at 1510 hours Pacific daylight time, a Mooney M20E, N6022Q, was substantially damaged when it impacted terrain during a post maintenance check flight at Lampson Airport, Lakeport, California. Visual meteorological conditions prevailed and no flight plan was filed. The aircraft, operated by Lake Aero Styling & Repair under the provisions of 14 CFR Part 91, was on departure climb out from Lampson at the time of the accident. The commercial licensed pilot was seriously injured.

The post maintenance check flight was performed following repair of damage caused by a gear-up landing. According to the operator, the repairs consisted of replacement of (fuselage) belly skin panels and nose gear doors, replacement of the propeller, and removal and reinstallation of the engine. The engine was shipped to an engine repair station for a "prop strike" inspection. An annual inspection of the aircraft was performed coincident with the repairs.

The engine repair station reported that the engine was disassembled and inspected for a prop strike in accordance with applicable Textron Lycoming Service Bulletins. No damage from the prop strike was found. Although the engine was received as an assembly with the engine mount and baffling installed, the engine repair station returned the assembled engine with the engine mount and baffling not installed.

A witness reported the aircraft's engine sounded normal during takeoff on runway 28 (3,600 feet long, 60 feet wide), and he observed the landing gear retract during initial climb out. He then observed the landing gear extend again and it appeared to the witness that the pilot was attempting to reverse course to land on the departure runway. During the turn, the aircraft stalled and crashed in a vineyard.

The pilot reported his recollection that soon after takeoff, while passing the end of the runway, the engine started losing power, "running rough". He started a left turn, intending to land downwind on runway 10 using the partial engine power available. During the turn the engine stopped completely and because of low airspeed and altitude, the pilot was unable to glide the aircraft to the runway.

An inspector from the Federal Aviation Administration (FAA) Sacramento FSDO examined the engine and reported that the spark plugs were clean and light gray color, and the oil and oil filter were clean. There was clean fuel in lines and fuel tanks. When the fuel lines were examined it was found that there was a loose B-nut on the line from the fuel control servo where it attaches to the fuel divider on top of the engine. When the electric fuel pump was turned on fuel sprayed from the loose nut. The inspector reported that the B-nut required about one turn in the tightening direction to reach the snug position. The inspector noted that

there was "torque seal" present on the threads of the elbow fitting but not on the body of the B-nut. No other discrepancies were noted.

On October 4, 1999, the engine was installed on a test stand at Clarksburg Air Repair, Clarksburg, California. The muffler was removed due to impact damage; however, the flame tubes were intact. A cracked casting in the intake manifold was repaired using soft putty. With the above mention B-nut tight, the engine was started and ran smoothly. A magneto check at 1,700 rpm produced drops of 75 - 100 rpm's on each magneto. The engine was accelerated to full power and smoothly produced about 2,700 rpm using a fixed pitch test propeller (test club). After about 5 minutes at full throttle, the above mentioned B-nut was loosened. After 1/8 turn fuel came out of the hose end. After 1/4 turn the engine began to run rough and between 1/4 and 1/2 turn the engine abruptly stopped. The B-nut was again tightened and the engine was started. The engine was operated at full throttle again for 3 minutes and produced smooth power about 2,700 rpm.

Another additional person (party) was Mr. Danny S. Phillips, Lake Aero Styling & Repair, Lakeport, California 95453.

Pilot Information

Certificate:	Commercial; Private	**Age:**	58,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-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:**	No
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	January 29, 1999
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	10035 hours (Total, all aircraft), 10035 hours (Pilot In Command, all aircraft), 25 hours (Last 90 days, all aircraft), 10 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Mooney	**Registration:**	N6022Q
Model/Series:	M20E M20E	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	870
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	August 20, 1999 Annual	**Certified Max Gross Wt.:**	2575 lbs
Time Since Last Inspection:	1 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	8743 Hrs	**Engine Manufacturer:**	Lycoming
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	IO-360-A1A
Registered Owner:	CORWIN W. NICHOLS	**Rated Power:**	200 Horsepower
Operator:	LAKE AERO STYLING & REPAIR	**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:	UKI ,614 ft msl	**Distance from Accident Site:**	17 Nautical Miles
Observation Time:	14:48 Local	**Direction from Accident Site:**	284°
Lowest Cloud Condition:	Scattered / 4000 ft AGL	**Visibility**	30 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots / None	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	0°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29 inches Hg	**Temperature/Dew Point:**	34°C / 11°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	(1O2)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	15:10 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	LAMPSON FIELD 1O2	**Runway Surface Type:**	Asphalt
Airport Elevation:	1378 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	28	**IFR Approach:**	None
Runway Length/Width:	3600 ft / 60 ft	**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious	**Latitude, Longitude:**	39.039512,-122.929367(est)

Administrative Information

Investigator In Charge (IIC):	Parker, Richard
Additional Participating Persons:	EARL BENEDICT; SACRAMENTO , CA NORMAN F MARSDEN; SAN CARLOS , CA GERALD R JAMES; WILLIAMSPORT , PA ROBERT G BROWN; LAKEPORT , CA
Original Publish Date:	August 14, 2001
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=47117