Aviation Investigation Final Report

Location:	CHARLESTON, South Carolina	**Accident Number:**	MIA99LA069
Date & Time:	January 26, 1999, 16:00 Local	**Registration:**	N4976M
Aircraft:	Beech A36	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation		

Analysis

The pilot reported that about 7 minutes after takeoff the airplane's engine lost oil pressure and started to lose oil, followed by a loss of engine power. The airplane started a descent that the pilot could not arrest, and continued to descend at a rate of about 100-200 feet per minute. The pilot then heard, 'a loud bang...a shudder occurred in the engine compartment, and the engine lost power.' The pilot banked the airplane, and headed towards a clearing. The engine compartment appeared to be on fire, and smoke began to enter the cockpit. He elected to make a forced landing in a field. The engine was examined at the crash site, and a hole was noted in the case at the No. 4 cylinder. Oil was observed on the No. 4 cylinder wall, the oil dip stick did not show any oil, and there was evidence that oil had leaked out of the engine. The engine was examined on February 12, 1999, and the examination revealed that oil had leaked at the engine oil filter adapter. In addition, there were more threads showing on one stud than on the other. A torque wrench was used to check torque on the nuts. It was noted that one nut rotated 1 1/2 rotations before reaching the specified torque. The other nut rotated 1 rotation before reaching torque. The oil filter adapter was removed for further examination, and revealed that the gasket was found with a gap at the corner with a opening of about 1/16 of an inch. It was concluded, that the leak caused the engine to exhaust the oil supply, causing the No. 4 cylinder connecting rod to fail, which resulted in a total loss of engine power.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the total loss of engine power caused by an oil leak at the oil filter adapter, resulting in a broken connecting rod, a subsequent forced landing and impact with rough terrain.

Findings

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

Findings
1. MAINTENANCE,INSPECTION - IMPROPER - OTHER MAINTENANCE PERSONNEL
2. LUBRICATING SYSTEM,OIL FILTER/SCREEN - LEAK
3. (C) FLUID,OIL - EXHAUSTION
4. (C) ENGINE ASSEMBLY,CONNECTING ROD - FAILURE

Occurrence #2: FORCED LANDING
Phase of Operation: EMERGENCY DESCENT/LANDING

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: EMERGENCY DESCENT/LANDING

Findings
5. TERRAIN CONDITION - ROUGH/UNEVEN

Factual Information

On January 26, 1999, about 1600 eastern standard time, a Beech A36, N4976M, registered to an individual lost engine power and impacted with the ground during a forced landing near Charleston, South Carolina. Visual meteorological conditions prevailed at the time, and a VFR flight plan was filed for the 14 CFR Part 91 personal flight. The airplane sustained substantial damage. The commercial-rated pilot reported no injuries. The flight was en route to Hilton Head, South Carolina, and had departed Charleston at 1545.

The pilot reported that during climb the airplane's engine lost oil pressure and started to lose oil, followed by a loss of engine power. He elected to make a forced landing in a field. The engine was examined at the crash site, and a hole was noted in the case at the No. 4 cylinder.

According to the pilot's summary and synopsis of circumstances, about 7 minutes after takeoff, he was cleared directly to Hilton Head, South Carolina, and was to maintain 2,500 feet. About 12 miles from the Charleston Airport, "...suddenly and without warning the propeller RPMs began to increased from 2,400 to 2,700." The pilot turned the airplane towards the Charleston Airport, advised Air Traffic Control (ATC) of the propeller overspeed condition, and that he intended to return to Charleston. He declared an emergency, and ATC cleared the airspace for the flight.

About 2 to 3 minutes after the initial increase in rpm, the propeller rpm increased to 3,000 rpm, and changed pitch. The airplane started a descent that the pilot could not arrest, and continued to descend at a rate of "about 100-200 feet per minute." The pilot then heard, "a loud bang...a shudder occurred in the engine compartment, and the engine lost power." The pilot banked the airplane, and headed towards a clearing. He said, the engine compartment appeared "...to be on fire, and smoke began to enter the cockpit." Before landing the pilot extended the landing gear, moved the fuel valve to the "OFF" position, turned off the mixture, and the electrical system. The landing site was a plowed field, and was plowed perpendicular to the direction of flight. The pilot elected to land straight ahead. At touchdown the airplane "appeared to slide first on its tail, then the landing gear hit a plowed furrow, and the aircraft came to an upright stop."

The engine was examined under the supervision of the FAA, on February 12, 1999, at Manning Aircraft Inc., Manning, South Carolina. Examination of the engine revealed that there was a hole in the case at the No. 4 cylinder. Oil was observed on the No. 4 cylinder wall, the oil dip stick did not show any oil, and there was evidence that oil had leaked out of the engine.

Low pressure air was introduced into the oil pressure line that ran to the gauge on the instrument panel, revealing an oil leak at the engine oil filter adapter. In addition, there were

more threads showing on one stud than on the other. A torque wrench was used to check torque on the nuts. It was noted that one nut rotated 1 1/2 rotations before reaching the specified torque. The other nut rotated once before reaching torque. The oil filter adapter was removed for further examination, and revealed that the gasket was found with a gap at the corner with a opening of about 1/16 of an inch. It was concluded, that the leak caused the engine to exhaust the oil supply, causing the No. 4 cylinder connecting rod to fail, which resulted in a total loss of engine power (see Continental Motor's report, an attachment to this report).

Pilot Information

Certificate:	Commercial	**Age:**	54,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:**	No
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	November 11, 1997
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	
Flight Time:	2375 hours (Total, all aircraft), 1875 hours (Total, this make and model), 2375 hours (Pilot In Command, all aircraft), 44 hours (Last 90 days, all aircraft), 15 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N4976M
Model/Series:	A36 A36	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	E-1271
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	November 15, 1998 Annual	**Certified Max Gross Wt.:**	3600 lbs
Time Since Last Inspection:	20 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Continental
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	IO-520BA
Registered Owner:	DAVID AMES	**Rated Power:**	280 Lbs thrust
Operator:		**Operating Certificate(s) Held:**	None
Operator Does Business As:	AMESCO INC.	**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	CHS ,42 ft msl	**Distance from Accident Site:**	12 Nautical Miles
Observation Time:	14:56 Local	**Direction from Accident Site:**	95°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	70°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	18°C / 9°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	(CHS)	**Type of Flight Plan Filed:**	VFR
Destination:	HILTON HEAD , SC (HXD)	**Type of Clearance:**	VFR
Departure Time:	15:45 Local	**Type of Airspace:**	

Airport Information

Airport:		**Runway Surface Type:**	
Airport Elevation:	40 ft msl	**Runway Surface Condition:**	
Runway Used:	0	**IFR Approach:**	None
Runway Length/Width:		**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:**	32.780952,-79.929428(est)

Administrative Information

Investigator In Charge (IIC):	Yurman, Alan
Additional Participating Persons:	LOUIS BLACKWELL; COLUMBIA , SC
Original Publish Date:	April 19, 2001
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=45673