



National Transportation Safety Board Aviation Accident Data Summary

Location:	Fayetteville, NC	Accident Number:	ERA16LA066
Date & Time:	12/11/2015, 1931 EST	Registration:	N3241N
Aircraft:	RAYTHEON AIRCRAFT COMPANY A36	Injuries:	1 Serious, 3 Minor
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

During a cross-country flight at night, the airplane experienced a total loss of engine power. The private pilot's attempts to restart the engine were unsuccessful. The pilot attempted to glide the airplane to a diversionary airport, but when he realized the airplane would not reach the airport, he conducted a forced landing into wooded terrain.

Teardown examination of the engine revealed that the No. 1 cylinder and No. 3 connecting rod had fractured. Metallurgical examination revealed that there was a gray rubbery substance on the case halves, through bolts, and main bearing saddle faces, which could have restricted oil flow. The engine manufacturer's overhaul manual and a service bulletin and service information letter (SIL) listed only one approved sealant for use between case halves, which was similar in color and texture to grape jelly not to the rubbery gray sealant found in the engine, which was not an approved sealant. Further, the SIL stated that the use of an incorrect sealant "on mating threads and between mating surfaces can cause incorrect torque application and subsequent engine damage or failure."

Further, the No. 3 connecting rod journal exhibited heat damage and deformation, and the No. 3 connecting rod fracture was consistent with a lack of lubrication. Additionally, the No. 4 main bearing saddle boss exhibited fretting damage, consistent with bearing shift due to lack of torque on the through bolts and blockage of its oil port, which also would have restricted oil flow.

Review of maintenance records revealed that the engine was overhauled about 20 months before the accident. The engine had been operated for about 300 hours during that time. It is likely that maintenance personnel applied the unapproved sealant to the engine case halves during the engine overhaul, which ultimately resulted in the total loss of engine power.

Flight Events

- Enroute-cruise - Powerplant sys/comp malf/fail
- Enroute-cruise - Loss of engine power (total)
- Enroute-cruise - Attempted remediation/recovery
- Emergency descent - Off-field or emergency landing

Probable Cause

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

Maintenance personnel's application of an unapproved sealant to the engine case halves during engine overhaul, contrary to manufacturer's instructions, which resulted in lubrication restriction due to a bearing shift and the subsequent internal failure of the engine due to the loss of case through-bolt torque.

Findings

Aircraft-Aircraft handling/service-Maintenance/inspections-(general)-Incorrect service/maintenance - C

Aircraft-Fluids/misc hardware-Fluids-Oil-Fluid level - C

Personnel issues-Task performance-Maintenance-Unauthorized maint/repair-Maintenance personnel - C

Personnel issues-Task performance-Use of equip/info-Use of policy/procedure-Maintenance personnel - C

Pilot Information

Certificate:	Private	Age:	46
Airplane Rating(s):	Single-engine Land	Instrument Rating(s):	Airplane
Other Aircraft Rating(s):	None	Instructor Rating(s):	None
Flight Time:	538 hours (Total, all aircraft), 245 hours (Total, this make and model), 502 hours (Pilot In Command, all aircraft), 20 hours (Last 90 days, all aircraft), 7 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	RAYTHEON AIRCRAFT COMPANY	Registration:	N3241N
Model/Series:	A36	Engines:	1 Reciprocating
Operator:	On file	Engine Manufacturer:	Continental
Operating Certificate(s) Held:	None	Engine Model/Series:	IO-550-B
Flight Conducted Under:	Part 91: General Aviation - Personal		

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Night
Observation Facility, Elevation:	FAY, 189 ft msl	Weather Information Source:	Weather Observation Facility
Lowest Ceiling:	None	Wind Speed/Gusts, Direction:	6 knots / , 220°
Temperature:	16° C	Visibility	10 Miles
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	STEVENSVILLE, MD (W29)	Destination:	CHARLESTON, SC (JZI)

Wreckage and Impact Information

Crew Injuries:	1 Minor	Aircraft Damage:	Substantial
Passenger Injuries:	1 Serious, 2 Minor	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Latitude, Longitude:	34.990000, -78.829722 (est)		

Administrative Information

Investigator In Charge (IIC):	Douglass P Brazy	Adopted Date:	11/15/2018
Note:	The NTSB did not travel to the scene of this accident.		
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=92437		

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