

Brief of Accident

Adopted 09/27/2007

DEN07LA083
File No. 22297 04/09/2007 Topeka, KS Aircraft Reg No. N460B Time (Local): 13:30 CDT

Make/Model: Beech / 35
Engine Make/Model: Continental / E185
Aircraft Damage: Substantial
Number of Engines: 1
Operating Certificate(s): None
Type of Flight Operation: Personal
Reg. Flight Conducted Under: Part 91: General Aviation

	Fatal	Serious	Minor/None
Crew	0	0	2
Pass	0	0	0

Last Depart. Point: Same as Accident/Incident Location
Destination: KANSAS CITY, MO
Airport Proximity: On Airport/Airstrip
Airport Name: PHILIP BILLARD MUNI
Runway Identification: 18
Runway Length/Width (Ft): 4331 / 75
Runway Surface: Asphalt
Runway Surface Condition: Dry

Condition of Light: Day
Weather Info Src: Weather Observation Facility
Basic Weather: Visual Conditions
Lowest Ceiling: 5500 Ft. AGL, Overcast
Visibility: 10.00 SM
Wind Dir/Speed: 190 / 011 Kts
Temperature (°C): 8
Precip/Obscuration: No Obscuration; No Precipitation

Pilot-in-Command Age: 57

Flight Time (Hours)

Certificate(s)/Rating(s)
Flight Instructor; Commercial; Multi-engine Land; Single-engine Land; Glider

Total All Aircraft: 2100
Last 90 Days: 75
Total Make/Model: 75
Total Instrument Time: UnK/Nr

Instrument Ratings
Airplane

According to the pilot, shortly after departing runway 18 she heard what "sounded like a loud backfire, a single bang," and then the engine lost power. The pilot selected a nearby field and performed a forced landing. During the landing the nose gear collapsed resulting in substantial damage. An examination of the engine revealed that the crankshaft gear separated from the crankshaft and was loose inside the accessory case. The upper portions of five of the six screws used to secure the gear to the crankshaft were found in the accessory case. Metallurgical examination of the fracture surface revealed signatures consistent with fatigue fractures. One screw was sectioned and tested for hardness with the results of 29, 30, 30, and 31 Rockwell C Harness (HRC). According to TCM, the drawing specifies an H5 fastener with a hardness requirement of 32 through 37 HRC. In addition, the head of the screw had a diameter of .40 inches or less. The TCM drawing specifies a diameter of .44 inches. According to TCM, this could have resulted in inadequate torque for this installation. An examination of the airplane flight controls and engine controls revealed no anomalies.

Brief of Accident (Continued)

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Topeka, KS

Aircraft Reg No. N460B

Time (Local): 13:30 CDT

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

Findings

1. 1 ENGINE - FAILURE,PARTIAL
 2. (C) ENGINE INSTALLATION,MOUNTING BOLT - IMPROPER
 3. (C) ENGINE INSTALLATION,MOUNTING BOLT - FAILURE,TOTAL
 4. ENGINE INSTALLATION,MOUNTING BOLT - FATIGUE
 5. (F) ACCESSORY DRIVE ASSY,DRIVE GEAR - SEPARATION
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Occurrence #2: FORCED LANDING
Phase of Operation: DESCENT - EMERGENCY

Findings

6. EMERGENCY PROCEDURE - PERFORMED - PILOT IN COMMAND
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Occurrence #3: ON GROUND/WATER ENCOUNTER WITH TERRAIN/WATER
Phase of Operation: DESCENT - EMERGENCY

Findings

7. (F) TERRAIN CONDITION - NONE SUITABLE

Findings Legend: (C) = Cause, (F) = Factor

The National Transportation Safety Board determines the probable cause(s) of this accident as follows.

The use of unapproved bolts to mount the crankshaft and gear together, causing fatigue and failure of those mounting bolts, resulting in the subsequent loss of engine power. Factors contributing to the accident were the separation of the crankshaft gear, and the lack of suitable terrain for a forced landing.