



National Transportation Safety Board Aviation Accident Final Report

Location:	DeKalb, IL	Accident Number:	CEN10LA143
Date & Time:	03/02/2010, 1345 CST	Registration:	N129LA
Aircraft:	BEECH 65-A90	Aircraft Damage:	Substantial
Defining Event:	Landing gear collapse	Injuries:	2 None
Flight Conducted Under:	Part 91: General Aviation - Flight Test		

Analysis

The Beech King Air had undergone maintenance that included a landing gear disassembly and inspection in preparation for the airplane's sale. Following the landing gear inspection, the left main landing gear strut was overfilled to an extension that exceeded maintenance specifications due to the strut not being able to maintain the manufacturer's specified pressure/extension. In preparation for a maintenance test flight relating to engine throttle adjustments, an asymmetric left fuel load was used by the pilot in an attempt to compress the overextended strut at an airplane weight that was less than the maximum gross weight of the airplane. Upon completion of the flight, the pilot returned to the departure airport where he attempted a landing with a left quartering tailwind and with the airplane flaps fully retracted. The airplane touched down between the runway centerline and right side of the runway. The left main landing gear then collapsed, and the airplane veered off the left side of the runway. The pilot, who was also the president of the company that performed the landing gear inspection and other maintenance items, reported that the landing gear was a Beech Queen Air part. Examination of the left main landing gear cylinder revealed that it separated at the lower joint above the upper torque knee. The joint exhibited corrosion and paint on its mating surface. The braze coverage in this area was noted to be acceptable with no anomalous voids. The separation was consistent with torsional overload. The examination also revealed that the landing gear shock assembly was a Beech Queen Air part that was not approved for installation on Beech King Air airplanes.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The collapse of the landing gear during landing due to the company's improper maintenance practices and the pilot's decision to take off with an overextended landing gear strut.

Findings

Aircraft	Main gear strut/axle/truck - Incorrect service/maintenance (Cause) Gear extension and retract sys - Failure (Cause) Performance/control parameters - Capability exceeded
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Factual Information

HISTORY OF FLIGHT

On March 2, 2010, at 1345 central standard time, a Beech 65-A90, N129LA, sustained substantial damage on impact with terrain during landing on runway 09 (4,201 feet by 75 feet, grooved asphalt) at DeKalb Taylor Municipal Airport (DKB), DeKalb, Illinois. The left main landing gear collapsed during landing roll out. Visual meteorological conditions prevailed at the time of the accident. The 14 CFR Part 91 maintenance test flight was not operating on a flight plan. The pilot and a pilot/mechanic-rated passenger were uninjured. The local flight originated from DKB at 1330.

The pilot stated that the flight was performed to check the engine performance and throttle settings. The flight remained in the traffic pattern of the departure airport where the pilot decided to return to make more adjustments. While landing on runway 09, the touchdown was "normal," but three-fourths through the rollout the left main landing gear wheel started to vibrate. The pilot suspected a flat tire so he applied "a bit" of reverse thrust with "some" braking. As the airplane slowed down, the left main landing gear collapsed and the airplane skidded to a stop, striking the propeller. The pilot also reported that the crosswind landing and an unbalanced fuel load resulted in a heavier left wing and the collapse of the left main landing gear. The pilot reported to the Federal Aviation Administration (FAA) that the landing was performed with the flaps fully retracted.

PERSONNEL INFORMATION

The pilot was the president of Win Win Aviation Inc., DeKalb, Illinois. He held a commercial pilot certificate with airplane single-engine land, airplane multi-engine land, instrument airplane, and rotorcraft-helicopter ratings. He accumulated a total flight time of 8,100 hours of which 1,200 hours were in the accident airplane make and model.

The passenger reported to the FAA that he was invited by the pilot for purposes of riding along and not performing any pilot duties. He also reported that he was not employed by nor did he perform any work on the airplane for Win Win Aviation, Inc. The passenger held an airline transport pilot certificate with an airplane multi-engine land rating and commercial privileges with an airplane single-engine land rating. The passenger also held a foreign based commercial pilot certificate with airplane single-engine land, airplane single-engine sea, and airplane multi-engine land ratings. The passenger also held a mechanic certificate with airframe and power plant ratings and inspection authorization.

AIRCRAFT INFORMATION

N129LA, a 1966 Beech 65-A90 (King Air), serial number LJ-129, was purchased by Win Win Aviation, Inc. on August 21, 2009, and was registered to Win Win Aviation, Inc. on September 2, 2009.

On February 18, 2010, the airplane was sold to Eagle Air Transport, Inc., which does business as Sky Dive Chicago, Ottawa, Illinois.

A logbook entry dated February 26, 2010, stated that a 6-year landing gear inspection had been completed and the airplane was returned to service. The entry was made by a Win Win Aviation Inc. mechanic. The entry stated that the left and right main landing gears were sent out for magnetic particle inspection, which was completed on January 25, 2010, by a test

facility. The test facility reported all of the submitted components were found acceptable.

A logbook entry dated March, 1, 2010, stated that Pratt & Whitney PT6A-28 engines (left engine serial number PCE-40600 and right engine serial number PCE-50740) were installed under a West Tennessee Aviation supplemental type certificate SA822SO. The airplane was ground run, rigged, and found airworthy. The entry also stated, "...Landing gear due for 6 year inspection per Raytheon Maintenance Manual... work to be completed by Win Aviation in DeKalb Illinois. See Win Aviation Log entry for 6 year item entry and return to service." The entry was made by a Sky Dive Chicago mechanic. The airplane accumulated a total time of 7,751.3 hours and a Hobbs time of 4,014.8 hours.

On April 20, 2010, the airplane sale to Eagle Air Transport, Inc. was recorded.

On April 30, 2010, the airplane's registration and sale acceptance to Eagle Air Transport Inc. was recorded.

The airplane's maximum gross weight was 9,650 lbs and its weight at the time of the accident was 7,451 lbs.

METEOROLOGICAL INFORMATION

The DKB Automated Observing System recorded the following wind information:

At 1323: 360 degrees at 8 knots

At 1343: 020 degrees at 7 knots

At 1400: 020 degrees at 6 knots

At 1423: 340 degrees at 8 knots

WRECKAGE AND IMPACT INFORMATION

The airplane came to rest off the left side of runway 09, near the intersection of runway 09 and the parallel taxiway to runway 2/20. A skid mark from the left main landing gear tire began between the centerline and right side of runway 09. The airplane sustained damage to the left main wheel well, the left wing, and the left propeller. The left main landing gear shock absorber assembly cylinder was separated from its piston at the brazed joint adjacent to upper torque knee collar. The brazed joint had some paint on its mating surface.

TESTS AND RESEARCH

According to the FAA, the airplane's left main landing gear was serviced four times before the accident and after each servicing the strut would lose pressure overnight while it was in the retracted position. The strut was then inflated to a 6-inch extension, which was about twice the recommended extension. After this last inflation, the strut did not lose pressure. In preparation for a maintenance test flight, the left wing was fueled while the right wing remained nearly empty so that the added fuel weight would compress the left wing strut.

Examination of the left main landing gear strut was performed at Hawker Beechcraft Corporation, Wichita, Kansas, under the supervision of personnel from the FAA's Aircraft Certification Office, Wichita, Kansas. The examination revealed that the separation signatures of the submitted components exhibited torsional overload. The joint showed indications of acceptable braze coverage and "no anomalous voids." The joint also exhibited evidence of

corrosion. The examination revealed that the left main landing gear shock absorber assembly was part number 50-810002, which is not approved for installation on Beech 90 series (King Air) airplanes but approved for installation on Beech 65 series (Queen Air) airplanes. Part number 50-810002 was designed with dampening rates for landing loads experienced by Queen Air 65 series airplanes.

When FAA inspectors arrived at the accident, they were met by the pilot who told them that the left main landing gear was a Queen Air part.

History of Flight

Landing-flare/touchdown	Landing gear collapse (Defining event)
Landing-landing roll	Collision with terr/obj (non-CFIT)

Pilot Information

Certificate:	Commercial	Age:	42, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 Without Waivers/Limitations	Last Medical Exam:	05/20/2009
Occupational Pilot:	No	Last Flight Review or Equivalent:	11/22/2009
Flight Time:	8100 hours (Total, all aircraft), 1200 hours (Total, this make and model), 8000 hours (Pilot In Command, all aircraft), 90 hours (Last 90 days, all aircraft), 20 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	BEECH	Registration:	N129LA
Model/Series:	65-A90	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:		Serial Number:	LJ-129
Landing Gear Type:	Tricycle	Seats:	7
Date/Type of Last Inspection:	05/06/2009, Continuous Airworthiness	Certified Max Gross Wt.:	9650 lbs
Time Since Last Inspection:		Engines:	2 Turbo Prop
Airframe Total Time:	7792 Hours	Engine Manufacturer:	Pratt & Whitney
ELT:	Installed, not activated	Engine Model/Series:	PT6A-28
Registered Owner:	Win Win Aviation	Rated Power:	680 hp
Operator:	Eagle Air Transport	Air Carrier Operating Certificate:	None

Meteorological Information and Flight Plan

Observation Facility, Elevation:	DKB, 781 ft msl	Observation Time:	1343 CST
Distance from Accident Site:	0 Nautical Miles	Condition of Light:	Day
Direction from Accident Site:		Conditions at Accident Site:	Visual Conditions
Lowest Cloud Condition:	Clear	Temperature/Dew Point:	1°C / -2°C
Lowest Ceiling:	Overcast / 2100 ft agl	Visibility	10 Miles
Wind Speed/Gusts, Direction:	7 knots, 20°	Visibility (RVR):	
Altimeter Setting:	30.01 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	DeKalb, IL (DKB)	Type of Flight Plan Filed:	None
Destination:	DeKalb, IL (DKB)	Type of Clearance:	None
Departure Time:	1330 CST	Type of Airspace:	

Airport Information

Airport:	De Kalb Taylor Municipal Airpo (DKB)	Runway Surface Type:	Asphalt
Airport Elevation:	781 ft	Runway Surface Condition:	Dry
Runway Used:	09	IFR Approach:	None
Runway Length/Width:	4201 ft / 75 ft	VFR Approach/Landing:	Full Stop; Traffic Pattern

Wreckage and Impact Information

Crew Injuries:	2 None	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 None		

Administrative Information

Investigator In Charge (IIC):	Mitchell F Gallo	Adopted Date:	12/20/2010
Additional Participating Persons:	Spencer Cull; Federal Aviation Administration; West Chicago, IL Mike Gibbons; Hawker Beechcraft Corporation; Wichita, KS		
Publish Date:	12/20/2010		
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=75461		

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