



Aviation Investigation Final Report

Location:	FALCON, Colorado	Accident Number:	FTW98LA211
Date & Time:	May 9, 1998, 14:00 Local	Registration:	N194EC
Aircraft:	Eller BD-5B	Aircraft Damage:	Substantial
Defining Event:		Injuries:	1 Serious
Flight Conducted Under:	Part 91: General aviation		

Analysis

While on a local test flight, the aircraft developed a violent vibration and the canopy partially separated causing control of the aircraft to be reduced. To prevent a stall the pilot had to maintain an exaggerated nose down attitude with the aircraft and conducted a full stall hard landing short of the runway. Postcrash examination revealed that one of the wooden propeller blades had cracked. The examination did not provide any evidence that would have caused the blade strike, weakness in the wood, or inadequate laminate bonding.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The vibration induced overload failure of the canopy holdback fitting resulting in reduced control capability. A factor was partial failure of one propeller blade for unknown reasons.

Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: MANEUVERING - TURN TO LANDING AREA (EMERGENCY)

Findings

1. (F) PROPELLER SYSTEM/ACCESSORIES, BLADE - CRACKED
 2. REASON FOR OCCURRENCE UNDETERMINED
 3. (C) MISCELLANEOUS, BOLT/NUT/FASTENER/CLAMP/SPRING - OVERLOAD
 4. AIRCRAFT CONTROL - REDUCED
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Occurrence #2: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: DESCENT - EMERGENCY

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

Factual Information

On May 9, 1998, at 1400 mountain daylight time, an experimental Eller BD-5B, N194EC, impacted terrain when the canopy partially separated during a test flight near Meadow Lake Airport, Falcon, Colorado. The airline transport certificated pilot, and sole occupant, received serious injuries and the aircraft sustained substantial damage. No flight plan was filed for this local area flight operating under Title 14 CFR Part 91. Visual meteorological conditions prevailed.

According to the pilot, he had conducted glide and power off stall tests and was making a low pass in the pattern when the aircraft began a violent vibration and involuntarily entered a left turn. The pilot said he corrected the turn and the canopy partially separated due to vibration. Due to the drag from the canopy, the pilot had to maintain a 20 to 35 degree nose down attitude to prevent the aircraft from entering a stall. He said he raised the nose and entered a full stall condition just prior to impact with the ground.

Examination of the aircraft by an FAA airworthiness inspector provided evidence of a crack in one blade of the wood propeller between 15 and 18 inches inboard from the blade tip. The blade was sent to the National Transportation Safety Board Materials Laboratory for examination. The laboratory report is attached and states that the blade contained no obvious area of mechanical damage but was cracked about one half to two thirds through the cross section of the blade arm. The laboratory examination found no evidence of weakness in the wood and no evidence of inadequate bonding between the plies of wood.

The aircraft examination also provided evidence that the canopy holdback fitting was fractured. The fitting was removed and it was also sent to the Materials Laboratory for examination. The laboratory report is attached and states that the fracture faces were typical of overstress.

The propeller and canopy holdback fitting were returned to the owner/builder following examination.

Pilot Information

Certificate:	Airline transport; Commercial	Age:	50, Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Front
Other Aircraft Rating(s):	Glider	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	Toxicology Performed:	No
Medical Certification:	Class 3 Valid Medical-w/ waivers/lim	Last FAA Medical Exam:	May 6, 1997
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	4477 hours (Total, all aircraft), 2 hours (Total, this make and model), 4477 hours (Pilot In Command, all aircraft), 23 hours (Last 90 days, all aircraft), 5 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Eller	Registration:	N194EC
Model/Series:	BD-5B BD-5B	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	Yes
Airworthiness Certificate:	Experimental (Special)	Serial Number:	1994
Landing Gear Type:	Retractable - Tricycle	Seats:	1
Date/Type of Last Inspection:	Annual	Certified Max Gross Wt.:	850 lbs
Time Since Last Inspection:	1 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	12 Hrs	Engine Manufacturer:	Suzuki
ELT:	Not installed	Engine Model/Series:	635CC
Registered Owner:	ELLER CONSTRUCTION, INC.	Rated Power:	65 Horsepower
Operator:		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:	COS ,6184 ft msl	Distance from Accident Site:	12 Nautical Miles
Observation Time:	13:54 Local	Direction from Accident Site:	220°
Lowest Cloud Condition:	Scattered / 6000 ft AGL	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	8 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	180°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29 inches Hg	Temperature/Dew Point:	15°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	(00V)	Type of Flight Plan Filed:	None
Destination:		Type of Clearance:	
Departure Time:	00:00 Local	Type of Airspace:	Class E

Airport Information

Airport:		Runway Surface Type:	
Airport Elevation:		Runway Surface Condition:	
Runway Used:	0	IFR Approach:	
Runway Length/Width:		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:	39.030372,-104.480636(est)

Administrative Information

Investigator In Charge (IIC):	Wiemeyer, Norman
Additional Participating Persons:	JOE JORDAN; DENVER , CO
Original Publish Date:	March 31, 2000
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=20599

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The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).