



Aviation Investigation Final Report

Location:	CHESTERFIELD, Missouri	Accident Number:	CHI95LA325
Date & Time:	September 14, 1995, 11:50 Local	Registration:	N112BD
Aircraft:	Bede Aircraft BD12	Aircraft Damage:	Substantial
Defining Event:		Injuries:	1 None
Flight Conducted Under:	Part 91: General aviation		

Analysis

THE EXPERIMENTAL AIRPLANE'S FLIGHT TEST MISSION WAS FOR HIGH SPEED TAXI TESTS WITH THE INTENT TO LIFT OFF THE GROUND FOR A FLIGHT ABOVE THE RUNWAY. AFTER LIFTOFF THE PILOT SAID THE AIRPLANE'S LONGITUDINAL HANDLING QUALITIES WERE UNDESIREABLE. HE SAID HE COULD NOT ACHIEVE A PROPER AIRPLANE PITCH ATTITUDE TO ESTABLISH A FLARE LANDING ATTITUDE BEFORE THE AIRPLANE TOUCHED DOWN HARD.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: THE AIRPLANE'S INADEQUATE HANDLING CHARACTERISTICS WHICH RESULTED IN THE INABILITY TO CONTROL PITCH ATTITUDE DURING LANDING.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: OTHER

Findings

1. (C) AIRCRAFT CONTROL - NOT POSSIBLE - PILOT IN COMMAND
 2. (C) ACFT/EQUIP, INADEQUATE HANDLING/PERF CAPABILITIES - OWNER/BUILDER
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Occurrence #2: HARD LANDING

Phase of Operation: LANDING - FLARE/TOUCHDOWN

Occurrence #3: GEAR COLLAPSED

Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings

3. LANDING GEAR - OVERLOAD

Factual Information

On September 14, 1995, at 1150 central daylight time (cdt), a Bede BD-12, N112BD, piloted by a commercial pilot, was substantially damaged during a hard landing onto runway 26 (7,005' X 150' dry asphalt) at the Spirit of St. Louis Airport, Chesterfield, Missouri. The 14 CFR Part 91 test flight was not operating on a flight plan. Visual meteorological conditions prevailed at the time of the accident. The pilot reported no injuries. The flight departed Chesterfield, Missouri, at 1150 cdt.

The pilot said he was doing high speed taxi tests on the airplane with the intent of a lift off and landing. As the airplane reached a speed where the nose wheel could be lifted off the ground the airplane lifted off. The pilot said N112BD had a constant airspeed profile during the short flight that reached a maximum of 15 feet above the runway.

During the flight the pilot said the "...longitudinal handling qualities were found to be undesirable and a proper 'flare' aircraft attitude was not achieved prior to touchdown." When the airplane touchdown occurred, the landing gear failed.

The pilot said the center of gravity (C.G.) calculations placed the C.G. at the mid-range point on the C.G. envelope before flight. He said that he and engineering personnel from the company decided that the airplane had an aft C.G. during their analysis of the accident. The pilot also said that the airplane's fuselage had a forward aerodynamic center due to its elliptical shape. According to the pilot both factors created a longitudinal control problem with the amount of up stabilator deflection available.

An FAA Principal Maintenance Inspector (PMI) examined N112BD and reported that its fuselage was cracked and buckled at the wing root area. The composite fuselage had a circumferential crack from one side of the cockpit opening to the other side. The main landing gear legs were buckled outward from the fuselage centerline and resting against the bottom of N112BD's wing. The nose gear assembly had separated from the airplane.

Pilot Information

Certificate:	Commercial	Age:	32,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--no waivers/lim.	Last FAA Medical Exam:	July 6, 1995
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	1300 hours (Total, all aircraft), 1200 hours (Pilot In Command, all aircraft), 40 hours (Last 90 days, all aircraft), 10 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Bede Aircraft	Registration:	N112BD
Model/Series:	BD12 BD12	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	Yes
Airworthiness Certificate:	Experimental (Special)	Serial Number:	001
Landing Gear Type:	Retractable - Tricycle	Seats:	2
Date/Type of Last Inspection:	August 29, 1995 Annual	Certified Max Gross Wt.:	1830 lbs
Time Since Last Inspection:	2 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	2 Hrs	Engine Manufacturer:	LYCOMING
ELT:	Installed, not activated	Engine Model/Series:	O-320-E2D
Registered Owner:	JAMES R. BEDE	Rated Power:	150 Horsepower
Operator:	BEDE AIRCRAFT CO.	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:	SUS ,470 ft msl	Distance from Accident Site:	
Observation Time:	11:56 Local	Direction from Accident Site:	
Lowest Cloud Condition:	Scattered / 8500 ft AGL	Visibility	20 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	8 knots / None	Turbulence Type Forecast/Actual:	/
Wind Direction:	270°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	28°C / 17°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	(SUS)	Type of Flight Plan Filed:	None
Destination:		Type of Clearance:	VFLF
Departure Time:	11:53 Local	Type of Airspace:	Class D

Airport Information

Airport:	SPIRIT OF ST. LOUIS SUS	Runway Surface Type:	Asphalt
Airport Elevation:	470 ft msl	Runway Surface Condition:	Dry
Runway Used:	26L	IFR Approach:	None
Runway Length/Width:	7005 ft / 150 ft	VFR Approach/Landing:	Full stop

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:	38.649749,-90.530403(est)

Administrative Information

Investigator In Charge (IIC): Gattolin, Frank

Additional Participating Persons: JUNE L TONSING; ST. ANN , MO

Original Publish Date: November 8, 1995

Last Revision Date:

Investigation Class: [Class](#)

Note:

Investigation Docket: <https://data.nts.gov/Docket?ProjectID=10035>

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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](#).