Aviation Investigation Final Report

Location:	ANTONIA, Missouri	**Accident Number:**	CHI97FA146
Date & Time:	May 26, 1997, 12:30 Local	**Registration:**	N5926
Aircraft:	Henry BARRACUDA	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

A witness 'heard a plane flying very low and the engine was cutting in and out.' He looked across the valley and saw 'a small aircraft flying below the ridge very erratic.' The witness said he saw the airplane go into a roll and descend at a 45-degree angle. 'Just as I lost sight (of the airplane), the engine seemed to rev up slightly, then stop. I could hear the plane hitting the tree tops and then a loud thud.' Another witness said that he saw the airplane 'enter the clouds and then re-appear at tree top level in a descending left turn.' The witness said that as the airplane disappeared from sight, the engine sound increased, then decreased, followed by the sound of the airplane crashing into the trees. The pilot was not instrument rated. The weather was reported as broken to overcast ceiling of 400 feet mean sea level (MSL), 2 miles visibility, and winds from 110 degrees at 7 knots. There was no report that the pilot received a weather briefing before flight. The outboard 8 feet of the left wing was located 405 feet east-northeast of the main wreckage, and the left flap was found about 435 feet east-southeast of the main wreckage. An exam of the left wing revealed evidence of an in-flight breakup. The left main spar was bent upward and splintered. The wood laminates covering the forward and aft surfaces of the spar section showed wood fibers pulled apart in an upward vector. No anomalies were found that would have occurred before the in-flight breakup.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: inadvertent flight by the pilot into instrument meteorological conditions (IMC), spatial disorientation of the pilot, which led to his loss of aircraft control, and the pilot exceeding the design stress limits of the airplane, which led to an in-flight breakup of the airplane. Factors related to the accident were: the pilot not obtaining a weather briefing before flight, an encounter with adverse weather (low ceiling and fog), and the pilot's lack of instrument

experience.

Findings

Occurrence #1: IN FLIGHT ENCOUNTER WITH WEATHER
Phase of Operation: CRUISE

Findings
1. (F) PREFLIGHT PLANNING/PREPARATION - INADEQUATE - PILOT IN COMMAND
2. (F) WEATHER CONDITION - LOW CEILING
3. (F) WEATHER CONDITION - FOG
4. (C) VFR FLIGHT INTO IMC - INADVERTENT - PILOT IN COMMAND

Occurrence #2: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: CRUISE

Findings
5. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND
6. (C) SPATIAL DISORIENTATION - PILOT IN COMMAND
7. (F) LACK OF TOTAL INSTRUMENT TIME - PILOT IN COMMAND

Occurrence #3: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: DESCENT - UNCONTROLLED

Findings
8. (C) DESIGN STRESS LIMITS OF AIRCRAFT - EXCEEDED - PILOT IN COMMAND
9. WING - OVERLOAD
10. WING - SEPARATION

Occurrence #4: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Factual Information

HISTORY OF FLIGHT

On May 26, 1997, at 1230 central daylight time (cdt), a Henry Barracuda, N5926, operated by a private pilot, experienced separation of the left outboard wing section while maneuvering close to the terrain. The airplane was subsequently destroyed when it impacted the terrain in a wooded area four miles southeast of Antonia, Missouri. Instrument meteorological conditions prevailed at the time of the accident. The personal flight was being conducted under 14 CFR Part 91. No flight plan was on file. The pilot and passenger on board the airplane were fatally injured. The flight originated at Branson, Missouri, at 1130 cdt, and was en route to Columbia, Illinois.

Several witnesses on the ground heard the airplane just prior to the accident. Two of the witnesses also observed the airplane just prior to it impacting in the trees.

One witness was sitting in the driveway of his residence when he "heard a plane flying very low and the engine was cutting in and out." The witness looked across the valley toward the north and saw "a small aircraft flying below the ridge very erratic." The airplane was flying east to west. Before he lost sight of the airplane, the witness said he saw the airplane go into a roll and descend at a 45-degree pitch angle. "Just as I lost sight (of the airplane), the engine seemed to rev up slightly, then stop. I could hear the plane hitting the tree tops and then a loud thud."

A second witness said that he saw the airplane "enter the clouds and then re-appear at tree top level in a descending left turn." The witness said that as the airplane disappeared from sight, the engine sound increased, then decreased, followed by the sound of the airplane crashing into the trees.

Another witness, seated in the gardens outside his house, said that he heard "a small aircraft engine, and it was apparent to me that the plane was very low." The witness looked across the valley to the west and "noted we had fog, with a visibility less than half a mile." The witness said, "I heard the pilot cut the throttle back to idle and I could, for the next few seconds, actually hear the engine at idle. Within five seconds of that, the pilot opened the throttle and I distinctly heard the engine smoothly pick up rpm's. Then within a few seconds of his power up, I heard the plane's loud thud."

PERSONNEL INFORMATION

The pilot possessed a private pilot certificate with an airplane, single-engine land rating, issued on February 11, 1991.

The pilot's personal logbook record's last entry was on September 26, 1993. As of that date, the logbook indicated that the pilot had total 327.0 flying hours, all in single-engine land airplanes. Of that single-engine land airplane time, 15.0 hours were in the Henry Barracuda. Several witnesses confirmed that the pilot had flown an additional 7.0 hours in the Henry Barracuda.

According to the pilot's personal logbook record, the pilot's last recorded biennial flight review was on October 13, 1992, in a Piper PA-28-180 airplane.

AIRCRAFT INFORMATION

The airplane was a homebuilt kit. The airplane was issued a special airworthiness certificate, experimental, amateur-built airplane, on March 10, 1986. According to the aircraft logbook, the airplane made its first flight on April 2, 1986.

The airplane was sold to the pilot on June 16, 1993. The current airworthiness certificate for the airplane was issued on July 11, 1994.

According to the aircraft logbook, the last recorded inspection of the airplane in accordance with 14 CFR Part 43, Appendix D, was performed on August 19, 1994.

METEOROLOGICAL INFORMATION

The weather observer at Saint Louis, Missouri, at 1255 cdt, reported a broken to overcast ceiling of 400 feet mean sea level (MSL), 2 miles visibility, and winds of 110 degrees magnetic at 7 knots. Federal Aviation Administration (FAA) inspectors observed the same weather conditions at the accident site.

There was no report that the pilot received a weather briefing from flight service prior to departing Branson, Missouri.

WRECKAGE AND IMPACT INFORMATION

The NTSB on-site investigation began May 26, 1997 at 1830 cdt.

The airplane's main wreckage was located in a densely-wooded area approximately 820 feet west of Wedde Road, a north-south running paved road. The main wreckage was on an east-facing hill side, 84 feet up from a creek bed on a 45-degree slope. There was a 6- foot wide, 4-foot long, and 36-inch deep crater which defined the west edge of the main wreckage. Debris fanned east down the slope of the hill from the crater for approximately 40 feet. Several trees surrounding the northeast to southeast edge of the wreckage area showed damage to branches 50 to 60 feet up from their bases. Tree main branches and trunks showed slash marks of 75 to 80 degrees. A single 10-inch diameter tree, knocked over at the roots and

resting amongst the main wreckage, was severed in two pieces, 14 feet up from the roots. It showed slash marks of 70 degrees.

The main wreckage consisted of the fuselage, empennage, right wing and right main landing gear, the left inboard wing section, engine, forward landing gear and propeller. The main wreckage was oriented on a 247-degree magnetic heading.

The wood and fabric fuselage was fragmented into numerous small pieces. The engine cowling was broken open and found resting upon the engine. The forward fuselage including the cockpit area was crushed inward and broken open. The instrument panel, seats and material making up the floor and walls of the cockpit were crushed and compressed forward together and resting on top of the engine and firewall. The windscreen, canopy frame and cockpit windows were shattered. Pieces of the canopy frame, plexiglass, cockpit walls and the right upper engine cowling were scattered across a 54-foot area fanning southwest from 270-degrees to 205- degrees, out from the crater. The fuselage aft of the cockpit running rearward to the empennage was compressed, twisted and fragmented into numerous small pieces averaging approximately 3- inches square. Entangled amongst the fuselage wreckage were flight control cables, push-pull tubes, wire bundles and personal effects.

The empennage was twisted and broken into numerous pieces. Small pieces of the elevator and rudder remained attached to their control cables and hinges. Flight control continuity to the elevator and rudder were confirmed.

The main carry-through spar beginning approximately at the mid- span point on the left wing and running through the fuselage wreckage out to the right wing was broken into several pieces. Hydraulic lines and mechanical linkage to the main landing gear were fragmented and remained attached to the broken spar segments. The right main landing gear was intact and entangled in the wreckage of the right wing. The airplane's right inboard wing tank was found separated from the main spare and resting 20 feet south of the main wreckage. It was twisted and broken open.

The smell of fuel was prevalent around the accident site. The airplane's right outboard wing tank remained attached to the spar. It was twisted and torn open. The wood and fabric making up the upper and lower right wing surfaces was torn open and fragmented. The airplane's right aileron was fragmented into several large pieces. The right flap was torn out and broken open. Flight control continuity to the right aileron was confirmed.

The inboard 4 feet of the left wing was found amongst the main wreckage. The fabric and wood which made up the upper and lower wing surfaces and ribs were fragmented. The left flap was broken out and missing. The wood fibers at the main spar fracture were broken upward and twisted aft. The left inboard fuel tank was torn out and broken open.

The engine was found buried in the impact crater. It had broken free of the engine mounts and firewall. It was rotated clockwise 80-degrees and oriented on a 285-degree heading.

Examination of the engine revealed no anomalies.

The propeller spinner, cylinder, piston and spring were broken apart and embedded in rock at the bottom of the impact crater. Both propeller blades were broken out of their mounts. One blade was found at the east edge of the impact crater at the base of a tree. Both blades displayed severe torsional bending, chordwise scratching and tip curling. The other propeller blade was found under the engine. It showed several 1/4-inch deep nicks along its leading edge.

The outboard 8 feet of the left wing was located on the opposite hillside 405 feet from the main wreckage on a 075-degree heading. The wing section was intact and showed minor damage. The left aileron remained attached to the wing and was undamaged. A three-foot section of the main spar remained attached to the wing section. It was bent upward and splintered. Examination of the wood laminates covering the forward and aft surfaces of the spar section showed wood fibers pulled apart in an upward vector. The outboard wing fuel tank was intact and had approximately 5 gallons of fuel in it. The fuel was light blue in color.

The left main landing gear and landing gear door rested 15 feet north of the left outboard wing section. Both the gear and the door were undamaged. A retract spring attached to the gear strut was stretched, elongated and broken. A fracture was noted at the point where the main gear side brace attached to the main strut.

The left wing flap was located on the opposite hillside 435-feet from the main wreckage on a 120-degree heading. The left wing flap was intact.

Several pieces of wood and fabric material from the left wing were scattered on the opposite hillside at distances ranging from 400 feet to 500 feet from the main wreckage on an average heading of 098 degrees.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy of the pilot was conducted by the Jefferson County, Missouri, Medical Examiner, on May 27, 1997, at Saint Louis, Missouri. The results of FAA toxicology testing of specimens from the pilot were negative for all tests conducted.

ADDITIONAL INFORMATION

All wreckage was released and returned to Multi-Aero, Incorporated, Festus, Missouri.

Pilot Information

Certificate:	Private	**Age:**	59,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	March 25, 1997
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	334 hours (Total, all aircraft), 22 hours (Total, this make and model), 299 hours (Pilot In Command, all aircraft), 2 hours (Last 90 days, all aircraft), 2 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Henry	**Registration:**	N5926
Model/Series:	BARRACUDA BARRACUDA	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	287
Landing Gear Type:	Retractable - Tricycle	**Seats:**	2
Date/Type of Last Inspection:	August 17, 1994 Annual	**Certified Max Gross Wt.:**	2300 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	93 Hrs	**Engine Manufacturer:**	Franklin
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	6A-350
Registered Owner:	JAMES K. STEVENS	**Rated Power:**	235 Horsepower
Operator:		**Operating Certificate(s) Held:**	None
Operator Does Business As:		**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	STL ,605 ft msl	**Distance from Accident Site:**	32 Nautical Miles
Observation Time:	12:55 Local	**Direction from Accident Site:**	360°
Lowest Cloud Condition:	Unknown	**Visibility**	2 miles
Lowest Ceiling:	Overcast / 400 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	110°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29 inches Hg	**Temperature/Dew Point:**	17°C / 16°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	BRANSON , MO (PLK)	**Type of Flight Plan Filed:**	None
Destination:	COLUMBIA , IL (H49)	**Type of Clearance:**	None
Departure Time:	11:30 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:**	

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	38.360992,-90.369026(est)

Administrative Information

Investigator In Charge (IIC):	Bowling, David
Additional Participating Persons:	ADAM NOVAK; ST. ANN , MO
Original Publish Date:	January 30, 1998
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=10426