Aviation Investigation Final Report

Location:	Fort Collins, Colorado	**Accident Number:**	DEN01LA017
Date & Time:	November 22, 2000, 14:00 Local	**Registration:**	N9931W
Aircraft:	2000 McCoy Genesis	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Flight test		

Analysis

While the pilot/builder was conducting the 28th test flight following construction of the homebuilt aircraft, witnesses observed the aircraft flying in a westerly direction about 1,500 feet above the surface. The witnesses said the wings appeared to fold up and the aircraft descended vertically and impacted the ground in a open field trailing a streamed parachute. Investigation revealed the aircraft had been equipped with an aircraft recovery parachute and it had been activated by the pilot/builder. During deployment, the parachute had gone through the propeller and sheared off all the propeller blades. It also revealed a structural failure in the airframe where the pilot had drilled multiple holes at the left horizontal stabilizer attach point. The failure allowed the horizontal and vertical stabilizer to be displaced over the top of the aircraft. The aircraft was of a pusher propeller design and research into the parachute system provided information that in pusher propeller aircraft installations, the engine must be secured prior to the deployment of the parachute to prevent the parachute from becoming entangled in the propeller. The parachute shroud lines and Kevlar retention strap were wrapped around the propeller shaft and hub preventing the parachute from opening.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: Failure of an airframe stringer due to improper construction by the builder/pilot which rendered the aircraft uncontrollable. A factor was failure by the builder pilot to follow procedures and secure the engine prior to deploying the aircraft recovery parachute.

Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: CRUISE

Findings
1. (C) FUSELAGE,STRINGER - FAILURE,TOTAL
2. (C) FUSELAGE,STRINGER - PUNCTURED
3. (C) MAINTENANCE,INSTALLATION - IMPROPER - OWNER/BUILDER

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

Findings
4. AIRCRAFT CONTROL - NOT POSSIBLE - PILOT IN COMMAND

Occurrence #3: FORCED LANDING
Phase of Operation: DESCENT - UNCONTROLLED

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

Findings
5. MISC EQPT/FURNISHINGS,PARACHUTE/DRAG CHUTE - SNAGGED
6. (F) PROCEDURES/DIRECTIVES - NOT FOLLOWED - PILOT IN COMMAND

Factual Information

On November 22, 2000, at 1400 mountain standard time, a 2000 McCoy Genesis, N9931W, experimental homebuilt airplane was destroyed when it impacted the ground during a test flight approximately 4 miles south of Fort Collins, Colorado. The private pilot/builder received fatal injuries. The flight was operating in visual conditions under Title 14 CFR Part 91 and no flight plan was filed. The flight departed Fort Collins/Loveland Airport (FNL) about 1330. The accident site was 103 degrees magnetic heading , 5.9 miles from the departure airport.

According to witnesses, it appeared the aircraft was approximately 1,500 feet above the ground proceeding in a westerly direction. The witnesses said it appeared the wings folded up and the aircraft descended vertically to impact in an open field. The witnesses said the aircraft appeared to be trailing a parachute which did not blossom. There was no fire.

The pilot was the builder of the aircraft and held a private pilot certificate, single engine land, issued September 27, 1996. He did not possess an instrument rating. He also held a repairman-experimental aircraft builder certificate, issued April 28, 2000.

The pilot had 161 total flight hours, all of which was in single engine land airplanes. He had 44 hours flight time in the accident aircraft make and model. At the time of the accident, he was conducting the 28th test flight since building the aircraft.

The aircraft was a high wing, pusher propeller, reciprocating engine powered, fixed tricycle landing gear, two place airplane with a tubular frame, composite cabin, and fabric covered aerodynamic surfaces. It was equipped with a rocket deployed aircraft parachute recovery system.

The propeller was a composite fixed pitch, three-bladed design manufactured by Warp Drive, and the engine was a Stratus/Subaru model E81.

Examination of the wreckage and the accident scene revealed no lateral ground scar. The aircraft left a small crater at impact which contained the aircraft fuselage and engine. The wings were attached and extended outside the crater. Both wings were crushed. The vertical and horizontal stabilizers were bent over the top of the fuselage in "scorpion" fashion. The top left tubular frame member, which connected the fuselage to the stabilizers, was fractured at the horizontal stabilizer attach point. The other three tubes were bent up and to the left. The aircraft recovery parachute system was entangled in the wreckage. It was later identified as a BRS-5 manufactured by BRS, Saint Paul, Minnesota. The rocket launching system for the parachute had been activated and was located approximately 80 yards south of the impact site.

The fuselage was crushed longitudinally from the nose rearward and the engine was displaced toward the nose section of the aircraft. The engine remained attached to the airframe. The accessory section on the forward facing part of the engine was destroyed by impact forces.

All three propeller blades were sheared at the hub. Parachute shroud lines were wrapped around the propeller shaft and hub, and the Kevlar parachute retention strap was intact and anchored to the airframe forward of, and above the engine. It also was entangled in the propeller shaft and hub.

Detailed examination of the aforementioned tubular frame fracture, revealed that the horizontal stabilizer bolts to the tube at that point. Three holes had been drilled through the tube approximately 1/16 inch from each other. The facture extended through the three bolt holes. The bolt remained attached to the stabilizer. The opposing horizontal stabilizer attach point had only one hole and the stabilizer remained bolted to the tubular frame at that point. The fracture area was necked and exhibited shearing under tension.

Examination of the parachute system included the installation and activation instructions. The parachute was properly installed in the aircraft and the rocket firing lanyard had been activated. A placard in the aircraft and a warning in the instructions stated that in the Genesis installation, the propeller had to be stopped prior to activation.

An autopsy and toxicology (#2000CA-123) were conducted on the pilot by the Larimer County, Colorado Medical Examiner. The toxicology showed a vitreous ethanol level of 143.3 mg/dl. Samples were also sent to the Civil Aeronautical Medical Institute (CAMI), reference number 200000326001. CAMI tested kidney and muscle for ethanol and found none.

The aircraft was released to the owner's representative on December 13, 2000. The retained airframe tubing was returned to the owner's representative following testing.

Pilot Information

Certificate:	Private	**Age:**	62,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:**	February 11, 2000
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	September 12, 2000
Flight Time:	161 hours (Total, all aircraft), 44 hours (Total, this make and model), 96 hours (Pilot In Command, all aircraft), 30 hours (Last 90 days, all aircraft), 13 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	2000 McCoy	**Registration:**	N9931W
Model/Series:	Genesis	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	075
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	August 24, 2000 Condition	**Certified Max Gross Wt.:**	1400 lbs
Time Since Last Inspection:	28 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	31 Hrs at time of accident	**Engine Manufacturer:**	Subaru
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	E81
Registered Owner:	Arvan J. McCoy	**Rated Power:**	
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	FNL,5016 ft msl	**Distance from Accident Site:**	6 Nautical Miles
Observation Time:	14:55 Local	**Direction from Accident Site:**	103°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	20°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.98 inches Hg	**Temperature/Dew Point:**	11°C / -8°C
Precipitation and Obscuration:			
Departure Point:	Fort Collis, CO (FNL)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	13:30 Local	**Type of Airspace:**	Class E

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	40.520347,-105.139694(est)

Administrative Information

Investigator In Charge (IIC):	Wiemeyer, Norman
Additional Participating Persons:	JOHN STEVENSON; FAA FSDO; DENVER, CO
Original Publish Date:	July 30, 2001
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=50682