



# Aviation Investigation Final Report

<b>Location:</b>	Cape Girardeau, Missouri	<b>Accident Number:</b>	WPR19LA006
<b>Date &amp; Time:</b>	October 9, 2018, 10:50 Local	<b>Registration:</b>	N451JP
<b>Aircraft:</b>	Vans RV6	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Loss of control on ground	<b>Injuries:</b>	1 Fatal, 1 Serious
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

## Analysis

The pilot and passenger were landing in gusting crosswind conditions following a local flight. The passenger stated that the airplane touched down on the right side of the runway, bounced several times, departed the right side of the runway, and subsequently nosed over; a witness on the ground also watched the airplane bounce, depart the runway surface, and nose over in the grass. Weather observations indicated a left crosswind component between 9 and 15 knots about the time of the accident.

Postaccident examination of the airframe and engine revealed no anomalies that would have precluded normal operation, and the accident is consistent with the pilot's failure to attain a proper landing flare in gusting crosswind conditions, which resulted in the bounced landing, during which he failed to conduct a go-around. Subsequently, he did not maintain directional control, which resulted in the runway departure and nose-over.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's improper landing flare in gusting crosswind conditions, his failure to conduct a go-around, and his failure to maintain directional control, which resulted in a runway departure and nose-over.

## Findings

<b>Aircraft</b>	Landing flare - Not attained/maintained
<b>Personnel issues</b>	Aircraft control - Pilot
<b>Aircraft</b>	Directional control - Not attained/maintained
<b>Personnel issues</b>	Decision making/judgment - Pilot
<b>Environmental issues</b>	Crosswind - Ability to respond/compensate

## Factual Information

### History of Flight

Landing-landing roll	Loss of control on ground (Defining event)
Landing-landing roll	Collision with terr/obj (non-CFIT)
Landing-landing roll	Runway excursion
Landing-landing roll	Nose over/nose down

On October 9, 2018, about 1050 central daylight time, an experimental amateur-built Vans Aircraft Inc. RV-6A, N451JP, sustained substantial damage when it was involved in an accident in Cape Girardeau, Missouri. The pilot was fatally injured, and the pilot-rated passenger sustained serious injuries. The airplane was operated as a Title 14 *Code of Federal Regulations (CFR)* Part 91 personal flight.

According to a witness located at the airport, the airplane landed "a little long," then bounced "hard" upon touchdown, before bouncing two more times. Immediately following the third bounce, the nose landing gear folded back, and the airplane nosed over. The passenger stated that the pilot mentioned that he was going to land "a little faster" and not use flaps due to the wind. The passenger further stated that the pilot had trouble straightening the airplane when it touched down the first time. The airplane touched down on the right side of the runway, bounced "pretty high," then landed in a right crab before it "shot off the right side of the runway" and subsequently nosed over.

The airplane came to rest about 1,750 ft from the approach end of runway 20 and about 25 ft off to the right side of the runway. The witness statements were consistent with onboard GPS data and an airport surveillance video.

### Pilot Information

Certificate:	Private	Age:	74,Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	4-point
Instrument Rating(s):	None	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	BasicMed Unknown	Last FAA Medical Exam:	March 17, 2015
Occupational Pilot:	No	Last Flight Review or Equivalent:	June 23, 2018
Flight Time:	(Estimated) 230 hours (Total, all aircraft)		

## Pilot-rated passenger Information

<b>Certificate:</b>	Private	<b>Age:</b>	84,Male
<b>Airplane Rating(s):</b>	Single-engine land	<b>Seat Occupied:</b>	Right
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	4-point
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	Yes
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	BasicMed	<b>Last FAA Medical Exam:</b>	
<b>Occupational Pilot:</b>	UNK	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	(Estimated) 988 hours (Total, all aircraft)		

The pilot held an experimental aircraft builder repairman certificate. The pilot had completed the requirements of BasicMed.

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Vans	<b>Registration:</b>	N451JP
<b>Model/Series:</b>	RV6 A	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	2011	<b>Amateur Built:</b>	Yes
<b>Airworthiness Certificate:</b>	Experimental (Special)	<b>Serial Number:</b>	23435
<b>Landing Gear Type:</b>	Tricycle	<b>Seats:</b>	2
<b>Date/Type of Last Inspection:</b>	November 10, 2017 Condition	<b>Certified Max Gross Wt.:</b>	
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	183.4 Hrs as of last inspection	<b>Engine Manufacturer:</b>	Lycoming
<b>ELT:</b>	C91 installed, not activated	<b>Engine Model/Series:</b>	O-320-H2AD
<b>Registered Owner:</b>		<b>Rated Power:</b>	160 Horsepower
<b>Operator:</b>	On file	<b>Operating Certificate(s) Held:</b>	None

According to the kit manufacturer, due to the differences in each airplane built, the Pilot's Operating Handbook (POH) is the responsibility of the aircraft's builder/owner, and data such as reference speeds and crosswind limitations should be compiled from flight tests of each specific airplane.

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	KCGI,352 ft msl	<b>Distance from Accident Site:</b>	0 Nautical Miles
<b>Observation Time:</b>	10:53 Local	<b>Direction from Accident Site:</b>	206°
<b>Lowest Cloud Condition:</b>	Scattered / 3100 ft AGL	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	12 knots /	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	150°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	29.97 inches Hg	<b>Temperature/Dew Point:</b>	28°C / 19°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Cape Girardeau, MO (CGI )	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	Cape Girardeau, MO (CGI )	<b>Type of Clearance:</b>	Unknown
<b>Departure Time:</b>	10:02 Local	<b>Type of Airspace:</b>	Class D

The recorded weather conditions at Cape Girardeau Regional Airport (CGI), Cape Girardeau, Missouri, at 1050 included wind from 150° at 12 knots with gusts to 20 knots. Based on this observation, the crosswind component for landing on runway 20 was between about 9 knots and 15 knots, depending on the gust factor.

## Airport Information

<b>Airport:</b>	Cape Girardeau Rgnl CGI	<b>Runway Surface Type:</b>	Asphalt;Concrete
<b>Airport Elevation:</b>	341 ft msl	<b>Runway Surface Condition:</b>	Dry
<b>Runway Used:</b>	20	<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>	3997 ft / 100 ft	<b>VFR Approach/Landing:</b>	Full stop

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Fatal	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>	1 Serious	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>		<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 Fatal, 1 Serious	<b>Latitude, Longitude:</b>	37.225276,-89.570831(est)

All flight control surfaces remained attached to the airplane. Flight control continuity was established from the cockpit to all flight control surfaces. The elevator trim was observed in the neutral position and operated normally. The aileron trim was in the neutral position. The aileron trim operated normally with no anomalies noted. Examination of the brakes and tires revealed no anomalies.

The engine and all associated engine components and accessories were present. The crankshaft was manually rotated at the propeller and rotational continuity was established throughout the engine, accessory section, and valve train. During crankshaft rotation, thumb compression and suction were attained on all cylinders. A borescope inspection of the cylinders revealed normal operating signatures. The engine was run at various power settings with no anomalies noted.

## Additional Information

The FAA Airplane Flying Handbook, Chapter 8, Approaches and Landings, states:

*When the airplane contacts the ground with a sharp impact as the result of an improper attitude or an excessive rate of sink, it tends to bounce back in the air... Extreme caution and alertness must be exercised any time a bounce occurs, but particularly when there is a crosswind... When one main wheel of the airplane strikes the runway, the other wheel touches down immediately afterwards, and the wings become level. Then with no crosswind correction as the airplane bounces, the wind causes the airplane to roll with the wind, thus exposing even more surface to the crosswind and drifting the airplane more rapidly....When a bounce is severe, the safest procedure is to execute a go-around immediately.*

Guidance provided by the kit manufacturer regarding flight test procedures stated that "If you should accidentally hit hard enough to cause a sharp bounce back into the air, apply power and make a go-around for another landing attempt." It further stated that "It is probably better to start over rather than to salvage a bad landing out of an abnormal condition (bouncing back into the air at an unusual attitude or speed)."

## Medical and Pathological Information

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An autopsy of the pilot was not performed due to his organ donor status.

Toxicology testing performed at the FAA's Forensic Sciences Laboratory was negative for ethanol and tested-for drugs.

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Nixon, Albert		
<b>Additional Participating Persons:</b>	Erin Cappel; Federal Aviation Administration; St Louis, MO Louie Bettis; Federal Aviation Administration; St Louis, MO		
<b>Original Publish Date:</b>	February 2, 2021	<b>Investigation Class:</b>	2
<b>Note:</b>	The NTSB did not travel to the scene of this accident.		
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=98450">https://data.nts.gov/Docket?ProjectID=98450</a>		

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).