



# Aviation Investigation Final Report

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<b>Location:</b>	Sanderson, Florida	<b>Accident Number:</b>	ERA09LA392
<b>Date &amp; Time:</b>	July 8, 2009, 09:05 Local	<b>Registration:</b>	N774US
<b>Aircraft:</b>	NOLES VANCE L VANS RV7A	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	VFR encounter with IMC	<b>Injuries:</b>	1 Fatal
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

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## Analysis

The non-instrument-rated pilot departed on a visual flight rules flight without obtaining a weather briefing. Review of Doppler radar obtained from the National Weather Service depicted two bands of thunderstorms over northern Florida, the first running east-to-west and the other running northeast-to-southwest along central and western Florida. Recorded radar data showed the accident airplane's flight track approaching the band of thunderstorms, turning northeast and parallel to the weather, and then passing between the two weather areas. The flight track then turns back northwestward and penetrates the area of thunderstorms. A witness stated that the clouds in the vicinity of the crash site were overcast about 200 feet with light rain and distant thunder. Examination of the airplane revealed the vertical stabilizer and rudders separated and were not located. Examination of a tail cone section revealed fracture surfaces on the front and rear spar, and the rear doubler assembly exhibited slant-fracture features consistent with ductile overload due to exceeding the design limits. There was no evidence of preexisting damage due to fatigue or corrosion.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's continued visual flight into instrument meteorological conditions with convective activity and thunderstorms. Contributing to the accident was his failure to get an adequate weather briefing.

## Findings

<b>Environmental issues</b>	Thunderstorm - Awareness of condition
<b>Environmental issues</b>	Thunderstorm - Effect on equipment
<b>Personnel issues</b>	Weather planning - Pilot
<b>Aircraft</b>	Ventral struc (on vert stab) - Not specified
<b>Personnel issues</b>	Qualification/certification - Pilot
<b>Personnel issues</b>	Incorrect action selection - Pilot

## Factual Information

### History of Flight

<b>Prior to flight</b>	Preflight or dispatch event
<b>Maneuvering</b>	VFR encounter with IMC (Defining event)
<b>Maneuvering</b>	Windshear or thunderstorm
<b>Maneuvering</b>	Aircraft structural failure
<b>Uncontrolled descent</b>	Collision with terr/obj (non-CFIT)

### HISTORY OF FLIGHT

On July 8, 2009, about 0905 eastern daylight time, a Vans RV7A, experimental amateur-built airplane, N774US, registered to and operated by a private owner as a Title 14 Code of Federal Regulations Part 91 personal flight, collided with the ground in the vicinity of Sanderson, Florida. Instrument meteorological conditions were reported by a witness at the time of the accident, and the airplane received substantial structural damage. The non-instrument rated private pilot was killed. The pilot did not file a flight plan or receive a weather briefing before departing Wimauma Air Park (FD77), Wimauma, Florida at 0803, on a visual flight rules flight to McMinn County Airport (MMI), Athens, Tennessee. The flight was reported missing during the morning on July 9, 2009, and was located that afternoon by search and rescue personnel.

The owner of FD77 airport stated the pilot informed her during the night before the accident, that he would pick her up at MMI on July 8, 2009, and fly her back to FD77. When the pilot did not arrive at MMI, she attempted to locate him by phone and through the FD77 airport manager. All attempts were unsuccessful. The airport owner stated she knew the weather was stormy along the pilot's route of flight and figured the pilot elected to land at an alternate airport, but was unable to contact her because he was out of cell phone coverage. When she could not locate the pilot on the morning of July 9, 2009, the authorities were notified of the missing airplane.

A witness, who lives in the vicinity of the accident site, stated he was outside in his backyard on July 8, 2009, and heard a small airplane located to the northeast of his home. The engine was at a very high rpm and sounded like it was under "allot of strain." The engine noise lasted about 3 seconds, and then there was complete silence, followed by an impact sound, which he attributed to thunder. The witness stated the clouds were overcast about 200 feet with light rain and distant thunder. He further stated the weather had been bad all morning with thunderstorms moving in and out of the area.

Review of recorded radar data obtained from the United States Air Force 84th Radar Evaluation Squadron (RADES) showed a radar target with a 1200 transponder code, at 4,000 feet, near the accident site, at 0902:29. At 0903:41, the target was in a left descending turn at 2,800 feet. The

last radar hit was at 0904:29 and the target altitude was 1,600 feet.

#### PERSONNEL INFORMATION

The pilot, age 71, held a private pilot certificate issued on September 2, 2004, with ratings for airplane single-engine land. The pilot's logbook was not located by family members and his last flight review could not be determined. The pilot was issued an experimental aircraft builder certificate on January 29, 2009. The pilot's last valid FAA medical certificate was issued on March 26, 2007. The pilot indicated on his last application for the third-class medical certificate that he had accumulated 665 total flight hours.

#### AIRCRAFT INFORMATION

The Noles, Vans RV7A is a two-place airplane with a fixed tail-wheel landing gear, serial number 72389, registered on January 31, 2008. The airplane was issued a Special Airworthiness Certificate and Operating Limitations on February 16, 2008. A Mattituck TMX 360-horsepower engine powers the 1,800 pound gross weight airplane. Pilot Medical Medical Certificate:

The HOBBS meter was destroyed and the airplane logbooks were not located. The total engine and airframe time could not be determined.

#### METEOROLOGICAL INFORMATION

The closest weather reporting station to the accident site was from Lake City Municipal Airport (LCQ), located 14 miles west of the accident site.

The airport had an automated weather observation system (AWOS-3), which broadcasted weather locally, but does not transmit or archive the data on weather circuits. The next closest reporting station was from Cecil Field Airport (VQQ), Jacksonville, Florida, located approximately 23 miles east of the accident site at an elevation of 81 feet. Surrounding the time of the accident, VQQ reported the following:

At 0855, winds from 240 degrees at 5 knots, visibility 2 1/2 miles in light rain and mist, ceiling broken at 1,000 feet, broken at 1,900 feet, and overcast at 3,300 feet, temperature and dew point 23 degrees Celsius (C), altimeter 29.90 inches of Mercury (Hg).

A special observation recorded at 0914 included, wind from 180 degrees at 9 knots, visibility 3 miles in thunderstorms and moderate rain, ceiling broken at 1,300 feet, broken at 2,200 feet, temperature 23 degrees C, dew point 22 degrees C, altimeter 29.89 inches of Hg. Remarks: thunderstorm began at 0914, occasional lightning cloud-to-ground, thunderstorm south moving east.

The National Weather Service (NWS) Weather Surveillance Radar 1988 Doppler Radar (WSR-

88D), located in Jacksonville, depicted two bands of echoes over northern Florida. The first band was running east to west, south of the Jacksonville area. The other band was running northeast to southwest, along central and western Florida. The airplane radar track is observed approaching the band of echoes, turning northeast, paralleling the area, and passing between the two areas at 0859. Then the radar track turned back northwest and penetrated the area of echoes. The echo area at 0859 had a maximum reflectivity of 50 dBZ, or "extreme" intensity. At 0903 the reflectivity was at 45 dBZ, or "heavy" intensity and was along the flight track.

The NWS Terminal Aerodrome Forecast (TAF) issued for VQQ at 0501 forecasted winds from 210 degrees at 8 knots, visibility 6 miles in light rain, scattered clouds at 1,200 feet, ceiling broken at 4,000 feet. Temporarily between 0600 and 0800, winds variable at 15 knots gusting to 20 knots, visibility 2 miles in thunderstorms and heavy rain, scattered clouds at 500 feet, ceiling broken at 1,200 feet in cumulonimbus clouds. From 0800 to 1300, wind from 250 degrees at 8 knots, visibility better than 6 miles with thunderstorms in the vicinity, ceiling broken at 3,500 feet in cumulonimbus clouds, broken at 12,000 feet. The forecast continued to expect thunderstorms throughout the period.

The NWS had Convective Significant Meteorological Information (SIGMET) 31E current over the area, for an area of thunderstorms from 10 miles north-northwest of Craig Municipal Airport (CRG), to 60 miles south-southwest of Cross City Airport (CTY), to 90 miles west-southwest of CTY, to 10 miles north-northwest of CRG. The area of thunderstorms was moving eastward at 25 knots, with tops to 43,000 feet. The advisory implied severe to extreme turbulence, instrument flight rules conditions, and low-level windshear was possible with the storms.

## WRECKAGE AND IMPACT INFORMATION

Examination of the crash site by Federal Aviation Administration inspectors revealed the airplane collided with the ground in a nose down attitude, and came to rest on a heading of 240 degrees magnetic. No crash debris line was present. The engine assembly was buried about 5 feet below the surface of the ground, and was not attached to the engine mounts. One propeller blade was attached to the propeller hub assembly; the remaining propeller blade was separated. Both propeller blades exhibited leading edge damage and torsional twisting. The engine cowling was completely destroyed. The nose landing gear was destroyed. The left and right main landing gear was intact and attached to its mounting point.

The cockpit area was destroyed. No information could be retrieved from the instrument panel, power quadrant, or fuel selector valve. The pilot's seatbelt and shoulder harness was used by the pilot. Continuity of the flight controls could not be determined due to the extent of damage received during the accident.

Both wings remained attached to the airframe and their leading edges exhibited accordion crushing. The left aileron separated from its attachment points and was located in close proximity to the left wing. The left flap remained attached to its attachment points. The right

aileron and flaps remained attached to their attachment points. The fuel tanks were not identified.

The empennage aft of the pilot's compartment was intact and damaged. The vertical fin and rudder were missing and not recovered. The tail cone, where it attaches to the vertical fin assembly, was removed and sent to the National Transportation Safety Board Materials Laboratory, Washington, DC, for further examination. The left and right horizontal stabilizers and elevators remained attached and were damaged.

Examination of the tail cone revealed the vertical stabilizer separated from the aircraft fuselage by fractures in the front spar and rear spar doubler assembly. The fracture surfaces exhibited slant-fracture features consistent with ductile overload. There was no evidence of preexisting damage such as fatigue or corrosion.

The engine assembly and accessories received extensive damage. No fuel, combustion, or electrical tests could be performed. Visual inspection of the components revealed no anomalies.

## MEDICAL AND PATHOLOGICAL INFORMATION

The District 8 Medical Examiner's Office, at Gainesville, Florida, conducted a postmortem examination of the pilot, on July 14, 2009. The cause of death was "massive blunt force trauma." The Medical Examiner's Office informed the Forensic Toxicology Research Section, Federal Aviation Administration, Oklahoma City, that no toxicology specimens from the pilot could be obtained.

### Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	71, Male
<b>Airplane Rating(s):</b>	Single-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	None	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 3 With waivers/limitations	<b>Last FAA Medical Exam:</b>	March 26, 2007
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	665 hours (Total, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	NOLES VANCE L	<b>Registration:</b>	N774US
<b>Model/Series:</b>	VANS RV7A	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	Yes
<b>Airworthiness Certificate:</b>	Experimental (Special)	<b>Serial Number:</b>	72389
<b>Landing Gear Type:</b>	Tricycle	<b>Seats:</b>	2
<b>Date/Type of Last Inspection:</b>		<b>Certified Max Gross Wt.:</b>	1800 lbs
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>		<b>Engine Manufacturer:</b>	MATTITUCK
<b>ELT:</b>	Not installed	<b>Engine Model/Series:</b>	TMX 360
<b>Registered Owner:</b>	NOLES VANCE L	<b>Rated Power:</b>	180 Horsepower
<b>Operator:</b>	NOLES VANCE L	<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Instrument (IMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	VQQ	<b>Distance from Accident Site:</b>	15 Nautical Miles
<b>Observation Time:</b>	08:55 Local	<b>Direction from Accident Site:</b>	90°
<b>Lowest Cloud Condition:</b>		<b>Visibility</b>	2 miles
<b>Lowest Ceiling:</b>	Broken / 1000 ft AGL	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	5 knots / None	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	240°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	29.89 inches Hg	<b>Temperature/Dew Point:</b>	23°C / 23°C
<b>Precipitation and Obscuration:</b>	Light - None - Rain		
<b>Departure Point:</b>	Wimauma, FL (FD77)	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	Athens, TN (MMI )	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>	08:03 Local	<b>Type of Airspace:</b>	Class E

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Fatal	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>		<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 Fatal	<b>Latitude, Longitude:</b>	30.179445,-82.323608(est)



## Administrative Information

<b>Investigator In Charge (IIC):</b>	Smith, Carrol
<b>Additional Participating Persons:</b>	Steven Moore; FAA Orlando FSDO; Orlando, FL
<b>Original Publish Date:</b>	December 15, 2009
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class</a>
<b>Note:</b>	
<b>Investigation Docket:</b>	<a href="https://data.ntsb.gov/Docket?ProjectID=74243">https://data.ntsb.gov/Docket?ProjectID=74243</a>

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