Aviation Investigation Final Report

Location:	Steinhatchee, Florida	**Accident Number:**	ERA20LA315
Date & Time:	September 13, 2020, 12:15 Local	**Registration:**	N4889R
Aircraft:	Vans RV9	**Aircraft Damage:**	Destroyed
Defining Event:	Windshear or thunderstorm	**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot was conducting an instrument flight rules cross-country flight into an area under the influence of a tropical storm, where rain showers and thunderstorms were forecast to prevail. About 1 hour and 45 minutes into the flight, the pilot requested to divert to an airport short of his destination due to weather. At that time, the tropical storm was located south of his position, with bands of rain showers and thunderstorms rotating counter-clockwise around it. The air traffic controller cleared the pilot for the approach; however, she did not provide any weather information to the pilot, to include the local altimeter setting, radar-depicted precipitation, weather advisories, or current destination weather as required by air traffic control directives. The pilot subsequently turned into an area of spiral rain bands, which was growing in size and intensity. The growing area of rain showers and thunderstorms was very unstable, with the potential for updrafts of about 12,000 ft/min. Radar and radio contact was subsequently lost, and wreckage of the airplane was located in the Gulf of Mexico, about 1 nautical mile offshore. Distribution of the wreckage and subsequent evidence observed during the postaccident wreckage examination were indicative of an in-flight breakup.

The pilot's decision to initiate a flight into an area under the influence of a tropical storm, with forecast rain showers and thunderstorms, increased the potential for an encounter with significant convective weather. Given this information it is likely that the flight encountered strong updrafts while in the growing rain shower band and in instrument meteorological conditions, which ultimately resulted in a loss of control and an in-flight breakup. Had the pilot been provided timely information on the hazardous weather conditions, it is likely that the accident could have been prevented.

Probable Cause and Findings

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

The failure of the air traffic controller to provide hazardous weather information to the pilot, resulting in the flight's encounter with strong updraft conditions, an inflight loss of airplane control, and an in-flight breakup. Contributing was the pilot's decision to initiate a flight into an area under the influence of a tropical storm, with forecast rain showers and thunderstorms, which increased the potential for an encounter with significant convective weather

Findings

Personnel issues	Lack of communication - ATC personnel
Personnel issues	Decision making/judgment - ATC personnel
Personnel issues	Decision making/judgment - Pilot
Environmental issues	Thunderstorm - Decision related to condition
Aircraft	(general) - Capability exceeded

Factual Information

History of Flight

Approach-IFR initial approach	Windshear or thunderstorm (Defining event)
Approach-IFR initial approach	Loss of control in flight
Approach-IFR initial approach	Aircraft structural failure
Uncontrolled descent	Collision with terr/obj (non-CFIT)

On September 13, 2020, about 1215 eastern daylight time (EDT), an experimental amateur-built Van's RV-9A, N4889R, was destroyed when it was involved in an accident near Steinhatchee, Florida. The pilot and a student pilot-certificated passenger were fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The flight departed Jack Edwards Field (JKA), Gulf Shores, Alabama, about 1003 under an instrument flight rules flight plan with the destination of Ocala International Airport (OCF), Ocala, Florida. At 1149, during the cruise portion of the flight, the pilot requested to divert to Cross City Airport (CTY), Cross City, Florida due to weather.

At 1154:23, the pilot first contacted the Jacksonville, FL (ZJX) Air Route Traffic Control Center sector 13 controller while level at 9,000 ft above mean sea level (msl) and requested the RNAV (GPS)-A approach to CTY. At 1155:15, the sector 13 controller asked the pilot, "and ah eight niner romeo just confirm you wanted the RNAV runway three one." The pilot responded, "un ah negative ah eight niner ah romeo we would like the RNAV Alpha into Cross City." At 1155:32, the sector 13 controller acknowledged the pilot and cleared the flight direct to the initial approach fix, UGLUF. The pilot read back the clearance.

At 1204:03, the sector 13 controller instructed the pilot of N4889R to "cross UGLUF at or above three thousand, cleared RNAV Alpha into ah Cross City." The pilot responded, "Alright ah cross ah UGLUF at ah above ah three thousand cleared for the ah RNAV Alpha into Cross City eight niner romeo." The controller did not provide any weather information to the pilot, including the local altimeter setting, radar-depicted precipitation, weather advisories, or current CTY weather.

According to automatic dependent surveillance broadcast (ADS-B) data, at 1214:13 the airplane was in a left turn to the north, directly into an area of precipitation, with a Mode C reported altitude of 6,500 feet msl. The last ADS-B target was at 1214:27 at a reported altitude of 6,100 feet msl, as the airplane was in a left, descending spiral. At 1218:09, the sector 13 controller transmitted, "november eight niner romeo ah radar contact lost ah say position." The pilot did not respond.

Pilot-rated passenger Information

Certificate:	Student	**Age:**	42,Male
Airplane Rating(s):	None	**Seat Occupied:**	Unknown
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 1 Without waivers/limitations	**Last FAA Medical Exam:**	July 31, 2018
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	15 hours (Total, all aircraft)		

Pilot Information

Certificate:	Commercial	**Age:**	29,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Unknown
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	March 5, 2019
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	
Flight Time:			

The pilot's logbook(s) was not located after the accident, and no flight time was entered on the pilot's latest Federal Aviation Administration (FAA) medical certificate application.

The student pilot-certificated passenger's logbook was not located after the accident; his total flight time was derived from his latest FAA medical certificate application, dated July 31, 2018.

Aircraft and Owner/Operator Information

Aircraft Make:	Vans	**Registration:**	N4889R
Model/Series:	RV9 A	**Aircraft Category:**	Airplane
Year of Manufacture:	2003	**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	90421
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	June 26, 2020 Condition	**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	592 Hrs as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:	Installed	**Engine Model/Series:**	O-320-D2G
Registered Owner:	On file	**Rated Power:**	
Operator:	On file	**Operating Certificate(s) Held:**	None

The aircraft and engine logbooks were not located after the accident; inspection information was obtained from the mechanic who performed the latest condition inspection.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KCTY,38 ft msl	**Distance from Accident Site:**	22 Nautical Miles
Observation Time:	12:15 Local	**Direction from Accident Site:**	101°
Lowest Cloud Condition:	Scattered / 2500 ft AGL	**Visibility**	10 miles
Lowest Ceiling:		**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots /	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	120°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	29.91 inches Hg	**Temperature/Dew Point:**	31°C / 24°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Gulf Shores, AL (JKA)	**Type of Flight Plan Filed:**	IFR
Destination:	Cross City, FL (CTY)	**Type of Clearance:**	IFR
Departure Time:	09:03 Local	**Type of Airspace:**	Class G

At the time of the accident, Tropical Storm Sally was located in the eastern Gulf of Mexico with bands of rain showers and thunderstorms rotating counter-clockwise around it. The accident

airplane flew directly into one of the building spiral rain bands, as evidenced by the growing radar reflectivity signatures. The area penetrated by the airplane included moderate to heavy precipitation. In addition, high-resolution rapid refresh (HRRR) sounding indicated an unstable environment with the potential for strong updrafts on the order of ~12,000 ft/minute.

The accident site and surrounding area were covered by center weather advisories (CWAs), issued at 1051 and 1159, respectively. These advisories warned of an area of scattered moderate to heavy rain showers and thunderstorms moving northward. The rain shower and thunderstorm area was expected to gradually increase in size and intensity over the Gulf of Mexico waters during the period. The 1159 CWA (about 16 minutes prior to the accident) was not broadcast by the ZJX sector 13 controller for the accident pilot's awareness. Also, an AIRMET was valid for moderate turbulence below 12,000 ft.

The pilot received a weather briefing through ForeFlight at 0730 on the morning of the accident. The briefing contained all the standard imagery valid at the accident time and provided a forecast that thunderstorms and rain showers would be scattered to numerous (between 30% and 100% chance) around the destination airport and the accident site at the proposed landing time. The Terminal Aerodrome Forecast information for the proposed route of flight (via ForeFlight) also warned of the potential rain shower and thunderstorm conditions. Even though the CWAs were issued after departure, the accident region was covered by Convective SIGMET outlook areas and an ongoing convective SIGMET for just east of the proposed destination location.

Consolidated Storm Prediction for Aviation (CoSPA) images were retrieved for 1200, 1210, 1215, and 1220. The data showed that rain shower activity was moving from southeast to northwest with time and growing in areal coverage. Also, the accident site was located within an area of projected rain shower or thunderstorm growth from 1210 onward. This data would have been available to the ZJX controllers as a reference.

FAA Order JO 7110.65Y, *Air Traffic Control*, includes air traffic control procedures and phraseology pertaining to weather for use by personnel providing air traffic control services. The ZJX sector 13 controller did not issue the local altimeter setting per section 2-7-2c, and she did not issue radar depicted precipitation per section 2-6-4. The ZJX sector 13 controller did not provide pertinent CWAs to the pilot per section 2-6-6. The ZJX sector 13 controller did not provide local CTY weather per sections 2-1-2 and 4-7-10, and she did not ask for or provide pilot reports, or PIREPS, per section 2-6-2.

Airport Information

Airport:	Cross City Airport NONE	**Runway Surface Type:**	
Airport Elevation:	43 ft msl	**Runway Surface Condition:**	Unknown
Runway Used:		**IFR Approach:**	RNAV
Runway Length/Width:		**VFR Approach/Landing:**	Full stop

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	None
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	29.7,-83.51667(est)

The wreckage was located by local authorities in shallow water, about 1 nm offshore, and about 21 nm west-northwest of CTY. The main wreckage, consisting of the forward fuselage, engine, propeller, and landing gear, was located about 0.34 nm northwest of the last ADS-B target. The separated left wing was located about 290 ft west of the main wreckage. The separated right wing was located about 482 ft northwest of the main wreckage. Parts of the empennage were located about 1,300 ft west-northwest of the main wreckage. Many of the recovered parts were found floating; therefore, drift from their original positions was probable.

After recovery from the water, the wreckage was transported to a storage facility for further examination by an NTSB air safety investigator.

Fuselage

The fuselage separated at the cockpit area, forward of the cockpit seats, and was continuous aft to the area where it was separated at the empennage. The aft fuselage structure was crushed in a downward direction. The right seat lap belt and shoulder harness were in place and unbuckled. The left seat lap belt was attached to structure on the left-wing aft spar carry-though. The left seat shoulder harness was missing. Neither cockpit seat was located. The windscreen and canopy were not located.

The forward fuselage consisted of the main spar carry-through structure, main landing gear, engine firewall, engine, propeller, and nose landing gear. The rudder cables remained attached to the rudder assembly; the right seat pedals were separated and missing. The elevator pushrod was connected to the control yoke assembly and extended aft. The flight control tubes from the cockpit to the empennage were separated and missing; therefore, control continuity to the empennage could not be confirmed.

Left Wing

The left wing was separated from the fuselage and was generally intact; the separation occurred at the wing root. The fracture surfaces of the main spar caps exhibited overload signatures. There was minimal bending of the spar caps at the fracture points. There was not any noticeable permanent bending of the main spar along its length. Bending on the spar mating surfaces in the fuselage was consistent with an up and aft failure mode. The left aileron remained attached to the wing by its hardware. The outer edges of the aileron were bent down. Control continuity was confirmed from the control surface through the pushrod to the break at the wing root. The tubular pushrod fracture exhibited overstress signatures. The left flap was found in the retracted position.

Right Wing

The right wing exhibited more impact damage than the left wing. The main spar fractured about 12 in from the wing root. The bending of the spar was consistent with an aft-and-down direction at the time of failure. The leading edge of the right wing exhibited an up-and-aft bending signature; the origin of the damage was not evident. The fracture surfaces of the main spar caps exhibited overload signatures. The aileron was separated from the wing; the outboard 1 ft was missing. The inboard 4 ft of flap were separated from the main wing structure. Flight control continuity to the aileron could not be confirmed due to the impact damage.

Empennage

The vertical stabilizer separated from the tail cone at the base. The rudder remained attached to the vertical stabilizer. The lower 12 inches of the rudder was missing. The upper 16 inches of the rudder, including the counterweight, was folded over 180° to the left. The leading edge of the vertical stabilizer exhibited no significant impact damage. There was a diagonal bend at the forward left side of the vertical stabilizer, about 14 inches long.

The left horizontal stabilizer was separated and intact. There was no evidence of impact damage to the leading edge of the stabilizer. The outboard 40 inches of the upper surface of the left elevator was torn away, including the entire elevator counterweight, which was missing. The lower skin of the elevator remained intact.

The right horizontal stabilizer was separated from the empennage. The right elevator was separated from the horizontal stabilizer. There was crushing and bending to the inboard sections of each surface.

The tail cone, including the horizontal stabilizer carry-through spars, was found as a separate section. The forward spar of the left horizontal stabilizer was bent in the forward direction. The forward spar of the right horizontal stabilizer was bent in the aft direction.

Engine and Propeller

The engine remained attached to its truss mount and the truss mount was attached to the firewall. The engine exhibited impact damage on the upper surfaces of the cylinders; all pushrods were bent and/or partially separated. The magnetos were removed for examination; they contained salt water and would not produce spark when rotated manually.

The carburetor was removed for examination. The composite floats were intact. The bowl contained about one tablespoon of a fuel and water mixture. The butterfly was partially open and would not move; rust and corrosion were evident. The inlet fuel screen was coated with fine, light-gray-colored sand. The fuel gascolator contained about 3 oz of blue-colored fuel and about 1 oz of water. The screen was clean and clear. The engine-driven fuel pump was removed for examination; the unit contained a trace amount of fuel and pumped when actuated manually.

The top spark plugs were removed; the nos. 1, 2, and 3 plugs exhibited normal wear and color when compared to a Champion inspection chart, with surface corrosion and embedded sand. The no. 4 plug was impacted with wet sand. The ignition harness had impact and corrosion damage and was not tested. The air intake and filter were unobstructed.

The engine crankshaft was partially turned through using the propeller. About 270° of turn was performed; internal continuity was confirmed through the accessory drive gears at the aft section of the engine. Impact damage and salt water/sand contamination prevented a compression test.

The fixed-pitch Sensenich aluminum propeller remained securely attached to the engine. The propeller blades exhibited minimal damage with no bending or chordwise scratching noted.

Postaccident examination of the airframe and engine revealed no evidence of any preaccident mechanical malfunctions or failures that would have precluded normal operation.

Medical and Pathological Information

The pilot and student pilot-certificated passenger were not located after the accident.

Administrative Information

Investigator In Charge (IIC):	Hicks, Ralph
Additional Participating Persons:	Gregory King; FAA/ FSDO; Tampa, FL
Original Publish Date:	August 31, 2022
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=101957