Aviation Investigation Final Report

Location:	Pierson, Florida	**Accident Number:**	ERA25FA119
Date & Time:	February 14, 2025, 18:40 Local	**Registration:**	N40EA
Aircraft:	Cessna 208	**Aircraft Damage:**	Substantial
Defining Event:	VFR encounter with IMC	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Positioning		

Analysis

The pilot was conducting a visual flight rules (VFR) cross-country repositioning flight at dusk in preparation for skydiving activities the following morning. Although he had accumulated more than 8,600 total flight hours, he did not hold an instrument rating.

The ADS-B data for the flight showed that the pilot did not fly a direct route to the destination airport and that the airplane's altitude varied throughout the flight. During the first half of the flight, the pilot flew the airplane northbound along a major interstate at an altitude of about 1,700 ft mean sea level (msl). He then turned left and flew the airplane west over a city and climbed to 3,100 ft msl before turning right to the north-northeast. Weather conditions along the latter portion of the route included areas of low ceilings and cloud cover. The airplane's meandering flight path was consistent with a pilot attempting to avoid entering instrument meteorological conditions (IMC) and/or using ground lighting and roadways to navigate and maintain visual references.

The ADS-B data showed that, in the final minute of the flight, the airplane entered a descending 180° turn to the right, and the descent rate increased steadily to greater than 12,000 ft per minute (fpm) until the data ended. Although the pilot's initiation of the right turn may have been an attempt to avoid or exit IMC, a review of available weather information revealed that, about the time of the right turn, the airplane likely encountered and remained in IMC consisting of significantly reduced visibility and low ceilings while flying over a rural area with few ground lights or other visual references.

Loss of external visual references during VFR flight presents a high risk of spatial disorientation and loss of control. Several risk factors for spatial disorientation were present in this accident: the pilot did not have an instrument rating and, thus, likely had limited experience

flying in instrument meteorological conditions; the weather conditions included reduced visibility and low ceilings; and the flight occurred near dusk which would further limit the pilot's ability to maintain outside visual reference when flying in areas of limited ground cultural lighting. Based on these factors, and the rapidly descending flight path and severely fragmented wreckage consistent with a high-energy impact, the pilot likely experienced spatial disorientation after entering IMC and subsequently lost control of the airplane.

A postaccident examination of the wreckage revealed no evidence of any preimpact mechanical malfunction or failure that would have precluded normal operation. Although the pilot's age, history of high blood pressure (which he reported at his most recent aviation medical examination), and possible diabetes or prediabetes (as suggested by the metformin detected by postmortem toxicological testing) were associated with some increased risk of having impairing cardiovascular disease, the pilot's autopsy was too limited by injury to provide significant information about his cardiovascular health at the time of the accident. Although potentially impairing effects of diabetes, including fatigue and vision changes, could not be excluded based on the available medical evidence, the circumstances of the accident did not indicate that medical factors likely contributed to the accident.

Probable Cause and Findings

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

The non-instrument-rated pilot's continued visual flight into instrument meteorological conditions, which resulted in spatial disorientation and a subsequent loss of control.

Findings

Personnel issues	Decision making/judgment - Pilot
Personnel issues	Monitoring environment - Pilot
Environmental issues	Low light - Decision related to condition
Environmental issues	Low ceiling - Decision related to condition
Personnel issues	Spatial disorientation - Pilot

Factual Information

History of Flight

Enroute	VFR encounter with IMC (Defining event)
Enroute	Loss of visual reference
Enroute	Loss of control in flight

On February 14, 2025, about 1840 eastern standard time, a Cessna 208, N40EA, was substantially damaged when it was involved in an accident near Pierson, Florida. The commercial pilot was fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 positioning flight.

The non-instrument-rated commercial pilot departed Sebastian Municipal Airport (X26), Sebastian, Florida, at 1752 under VFR and was en route to Palatka Municipal Airport/Lt. Kay Larkin Field (28J), Palatka, Florida, which was located about 125 nautical miles (nm) to the north-northwest. The purpose of the flight was to reposition the airplane for a scheduled skydiving operation the following day.

ADS-B data provided by the FAA indicated that, shortly after departure, during the initial en route portion of the flight, the airplane's ground track followed Interstate 95 North on a track of about 344° at an altitude of about 1,700 ft msl for about 50 nm.

The airplane then turned left to a heading of about 270° over DeLand, Florida, and climbed to 3,100 ft msl. After passing over the city, the airplane turned right to a ground track of about 024° while continuing to climb to a maximum altitude of 3,300 ft msl. The turn placed the airplane on a track about 35° right of the direct course line to its destination, about 30 nm south of 28J.

The reported weather along the route of flight and near the accident site consisted of twilight conditions (dusk), with scattered and overcast clouds between 2,700 to 3,300 ft msl and 7 to 10 miles visibility. At the destination airport, there were few clouds reported at 1,800 ft agl. The airplane's flight track and select surface weather observations are shown in figure 1 below.

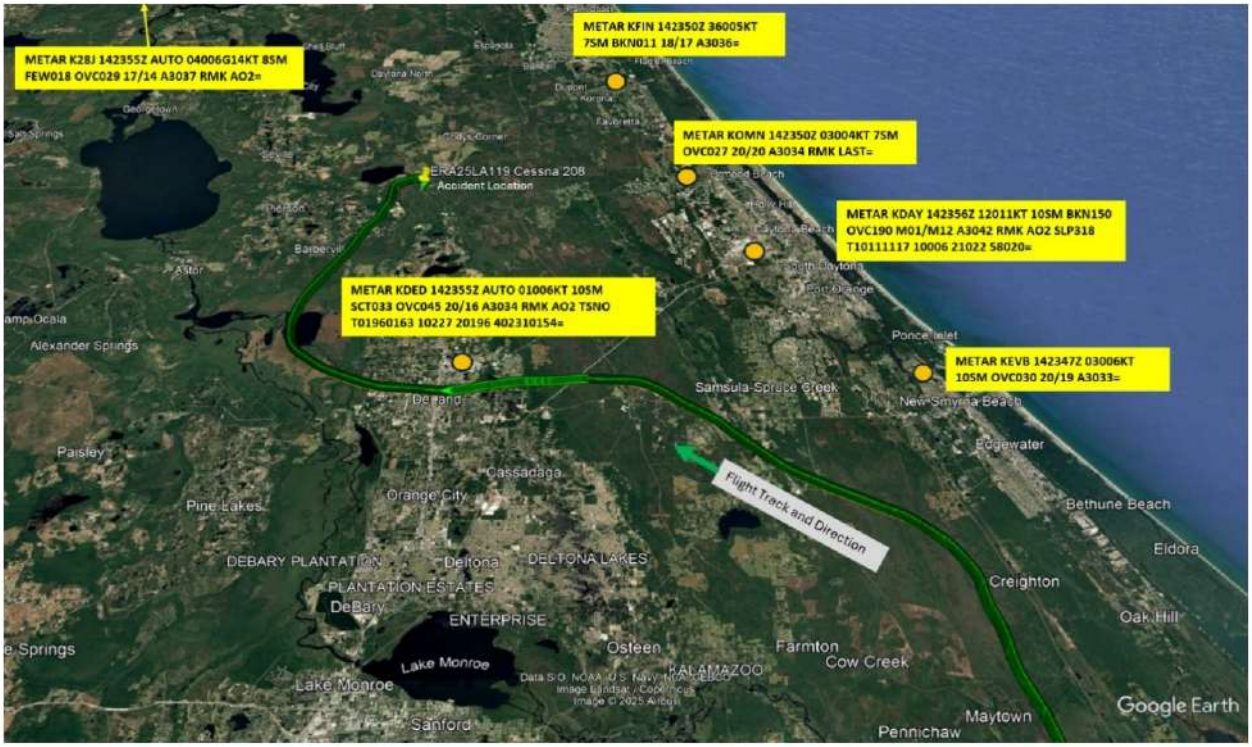

Figure 1. Flight track data with associated airports and their respective surface weather observations annotated.

About 5 nm after turning to the 024° track, the airplane began a steady descent, and its vertical speed oscillated between positive and negative values before entering a descending 180° turn to the right (see figure 2). The descent rate increased steadily to greater than 12,000 fpm until the data ended. The final ADS-B target was on a track of 209° at 400 ft msl (about 370 ft agl), at a groundspeed of 182 kts. The area where the final turn occurred was rural with few ground lights or other visual references.

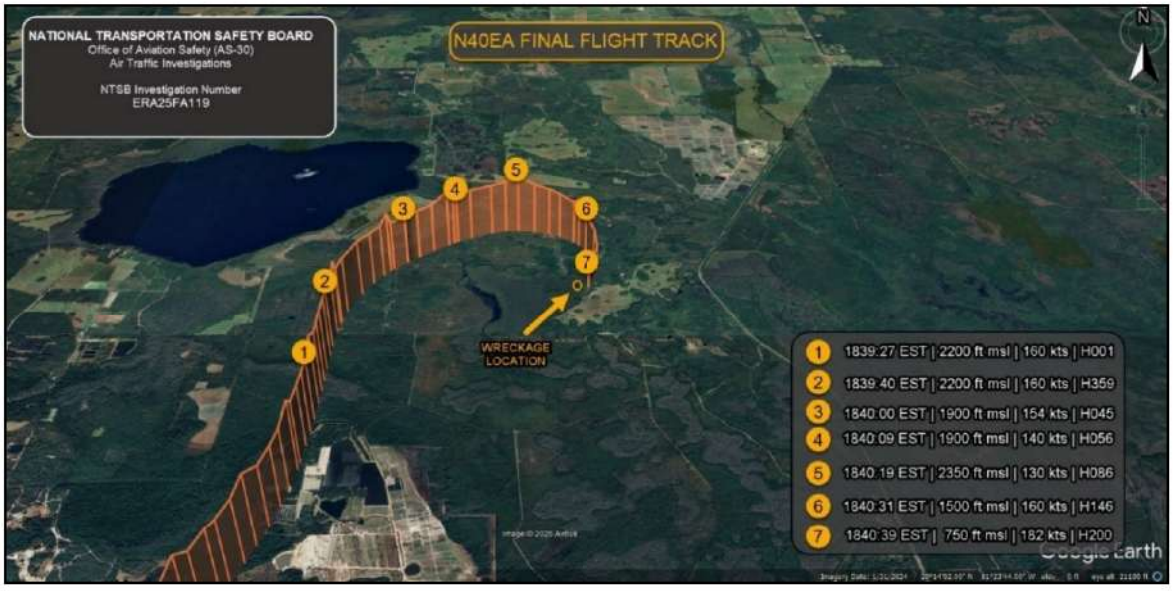

Figure 2. Flight track with altitudes and groundspeeds for final portion of the flight.

A review of a graphical presentation of the Un-Restricted Mesoscale Analysis (URMA) ceiling product valid for 1900 indicated cloud ceilings of about 550 ft agl in the vicinity of the accident site (see figure 3). A cloud top height forecast product valid at 1900 forecast cloud tops between 6,000 and 9,000 ft msl in the vicinity of the accident site.

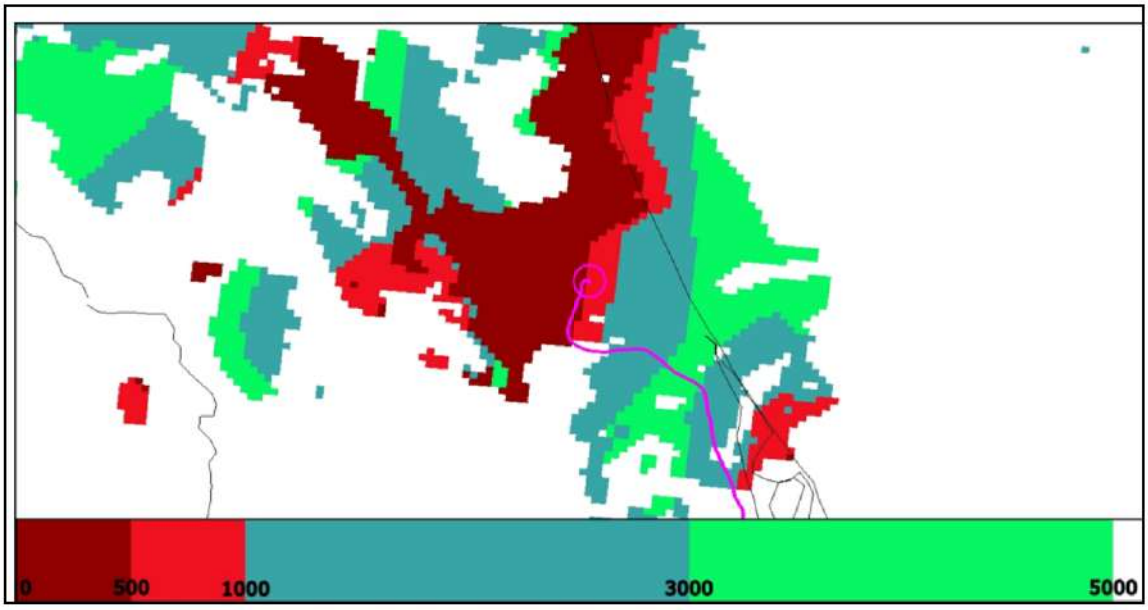

Figure 3. URMA ceiling analysis (in feet) valid for 1900. The accident aircraft's flight track is marked by the purple line, and the accident location is within the purple circle.

A review of the pilot's logbook revealed that he had accumulated about more than 8,600 total hours of flight experience. He did not hold an instrument rating.

The airplane impacted a densely wooded swamp at an elevation of 41 ft msl. The wreckage was scattered along a fan-like pattern from the primary impact point and was oriented on a 279° magnetic heading with a debris field that was about 75 yards long. The initial impact points were the tops of 65-ft trees with associated tree and limb fractures progressively lower to the terrain.

The propeller and engine assembly impacted the ground, creating a crater about 30 inches deep, and the propeller assembly was buried. The main body of the wreckage, consisting of the fuselage and cockpit, was discovered wrapped around trees. Both wings and the empennage were impact-separated, and the debris field contained severely fragmented parts consistent with a high-energy impact. The accident site and debris field were covered in 2 ft deep water, mud, and densely populated palmetto trees.

A strong odor of jet fuel was present at the site, and a fuel sheen was observed on the water. No evidence of postimpact fire was identified, and no indications of inflight fire were observed on the wreckage. About 90% of the airplane was recovered, and all flight control surfaces and major components were accounted for at the accident site.

Both wings were impact-separated and fragmented. All flight control surfaces were accounted for and showed impact damage. Flight control continuity could not be confirmed due to the severity of the wreckage fragmentation; however, the observed control cables exhibited features consistent with tensile overload, with a “broom straw” appearance. Clean cuts in the cables were performed by the first responders and the recovery personnel and were indicated with orange paint. No indications of a flight control anomaly were discovered during examination. Aileron trim actuator measurements on the right wing correlated to 13° trailing-edge-up deflection. The flaps were severely damaged; the flap actuator measured 5.6 inches, consistent with a near 0° flap setting (retracted) at the time of impact.

The empennage separated at impact, about 24 inches forward of the horizontal stabilizers. The inboard portions of the vertical stabilizer, and both horizontal stabilizers remained attached to the aft section of the empennage. The elevators and rudder separated at impact. Measurement of the elevator trim actuators correlated to 10° trailing edge up (nose down) on the left side and 15° trailing edge up (nose down) on the right side.

The propeller assembly reduction gearbox was severely damaged and exhibited features consistent with impact and rotational damage. Two of the three propeller blades were discovered in the primary impact crater, and both blades were completely separated from the hub. The blades were severely deformed with s-bending and exhibited chordwise scraping and gouges on the upper camber of the blades. Both propeller blades were fractured and missing about 10 inches of the tips. An extensive search for the missing blade was conducted but it was not located. Trees leading up to the main accident site exhibited chopping and slicing features consistent with propeller strikes.

The engine exhibited severe impact damage, and the compressor section was displaced 90° from the propeller gearbox. Several engine components, including the fuel control unit and fuel pump, were missing or severely damaged. The first-stage compressor rotor airfoils and air inlet struts were fractured. The second-stage compressor rotor airfoils were bent in the opposite direction of rotation, with the compressor stator airfoils bent in the direction of rotation. The first-stage planetary gear pins exhibited rubbing damage; the first-stage carrier was scored and the splined adapter was fractured. A follow-up examination on the engine identified contact signatures on internal components that were indicative of engine rotation at the time of impact. There were no preimpact anomalies discovered.

The cockpit and instrument panel were destroyed. The throttle quadrant, although damaged, was impact-separated and found relatively intact. The emergency power lever was at the mid-travel setting, the power lever was about 55%, and the propeller control was about 70% forward. The condition lever was full forward.

The Florida District 23 Office of the Medical Examiner performed the pilot's autopsy. According to the pilot's autopsy report, the cause of death was blunt trauma, and the manner of death was accident.

Postmortem toxicological testing by the FAA Forensic Sciences Laboratory detected ethanol at 0.016 g/hg in muscle tissue and did not detect ethanol in lung tissue. FAA toxicology results also included metformin detected in muscle tissue and lung tissue. No blood, urine, or vitreous fluid was available for toxicological testing.

Ethanol is the intoxicating alcohol in beer, wine, and liquor, and, if consumed, can impair judgment, psychomotor performance, cognition, and vigilance. Alcohol consumption is not the only possible source of ethanol in postmortem specimens. Ethanol sometimes may be produced by microbes in a person's body tissues after death, and such postmortem production is made more likely by extensive traumatic injury.

Metformin, a prescription oral medication commonly used for blood sugar control in diabetes and prediabetes, is not typically impairing and may be acceptable for FAA pilot medical certification if the underlying condition is determined to be acceptable.

At the pilot's most recent aviation medical examination, he reported a history of high blood pressure. He did not report any diabetes or prediabetes condition.

Pilot Information

Certificate:	Commercial	**Age:**	75,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 2 With waivers/limitations	**Last FAA Medical Exam:**	June 26, 2024
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 9000 hours (Total, all aircraft), 3000 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N40EA
Model/Series:	208	**Aircraft Category:**	Airplane
Year of Manufacture:	1985	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	20800065
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	December 31, 2024 100 hour	**Certified Max Gross Wt.:**	8000 lbs
Time Since Last Inspection:	55 Hrs	**Engines:**	1 Turbo prop
Airframe Total Time:	17716 Hrs as of last inspection	**Engine Manufacturer:**	Pratt & Whitney Canada
ELT:	Installed, not activated	**Engine Model/Series:**	PT6A-114A
Registered Owner:	EAGLE AIR TRANSPORT INC	**Rated Power:**	675 Horsepower
Operator:	Skydive Palatka	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Unknown	**Condition of Light:**	Night
Observation Facility, Elevation:	OMN,29 ft msl	**Distance from Accident Site:**	13 Nautical Miles
Observation Time:	18:50 Local	**Direction from Accident Site:**	82°
Lowest Cloud Condition:		**Visibility**	7 miles
Lowest Ceiling:	Overcast / 2700 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots / None	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	30°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	30.34 inches Hg	**Temperature/Dew Point:**	20°C / 20°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Sebastian, FL (X26)	**Type of Flight Plan Filed:**	None
Destination:	Palatka, FL (28J)	**Type of Clearance:**	None
Departure Time:	17:52 Local	**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	29.268161,-81.350456

Preventing Similar Accidents

Reduced Visual References Require Vigilance (SA-020)

The Problem

About two-thirds of general aviation accidents that occur in reduced visibility weather conditions are fatal. The accidents can involve pilot spatial disorientation or controlled flight into terrain. Even in visual weather conditions, flights at night over areas with limited ground lighting (which provides few visual ground references) can be challenging.

What can you do?

- Obtain an official preflight weather briefing, and use all appropriate sources of weather information to make timely in-flight decisions. Other weather sources and in-cockpit weather equipment can supplement official information.
- Refuse to allow external pressures, such as the desire to save time or money or the fear of disappointing passengers, to influence you to attempt or continue a flight in conditions in which you are not comfortable.
- Be honest with yourself about your skill limitations. Plan ahead with cancellation or diversion alternatives. Brief passengers about the alternatives before the flight.
- Seek training to ensure that you are proficient and fully understand the features and limitations of the equipment in your aircraft, particularly how to use all features of the avionics, autopilot systems, and weather information resources.

- Don't allow a situation to become dangerous before deciding to act. Be honest with air traffic controllers about your situation, and explain it to them if you need help.
- Remember that, when flying at night, even visual weather conditions can be challenging. Remote areas with limited ground lighting provide limited visual references cues for pilots, which can be disorienting or render rising terrain visually imperceptible. When planning a night VFR flight, use topographic references to familiarize yourself with surrounding terrain. Consider following instrument procedures if you are instrument rated or avoiding areas with limited ground lighting (such as remote or mountainous areas) if you are not.
- Manage distractions: Many accidents result when a pilot is distracted momentarily from the primary task of flying.

See https://www.ntsb.gov/Advocacy/safety-alerts/Documents/SA-020.pdf for additional resources.

The NTSB presents this information to prevent recurrence of similar accidents. Note that this should not be considered guidance from the regulator, nor does this supersede existing FAA Regulations (FARs).

Administrative Information

Investigator In Charge (IIC):	Mccarter, Lawrence
Additional Participating Persons:	Tony Hershberger; Textron Aviation; Wichita, KS Hugo Villanueva; FAA/FSDO; Orlando, FL Jean-Pierre Regnier ; TSB Canada; OF Mike Hodge Bridgeport; Pratt and Whitney Canada; Bridgeport, WV
Original Publish Date:	March 12, 2026
Last Revision Date:	
Investigation Class:	Class 3
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=199705