



# Aviation Investigation Final Report

|                                |                                      |                         |            |
|--------------------------------|--------------------------------------|-------------------------|------------|
| <b>Location:</b>               | Point Harbor, North Carolina         | <b>Accident Number:</b> | ERA21LA295 |
| <b>Date &amp; Time:</b>        | July 19, 2021, 18:48 Local           | <b>Registration:</b>    | N4529J     |
| <b>Aircraft:</b>               | ROBINSON HELICOPTER COMPANY R44 II   | <b>Aircraft Damage:</b> | Destroyed  |
| <b>Defining Event:</b>         | VFR encounter with IMC               | <b>Injuries:</b>        | 2 Fatal    |
| <b>Flight Conducted Under:</b> | Part 91: General aviation - Personal |                         |            |

## Analysis

The noncertificated pilot, who was the owner of the helicopter, originated the afternoon flight from a private residence, completed a brief fuel stop at an uncontrolled airport, and then continued toward the destination. Shortly after takeoff following the fuel stop, the pilot called a friend near the destination via video chat and informed him that he would arrive in an hour. The friend reported that everything seemed normal with the pilot, and he did not mention any concerns pertaining to the weather or helicopter.

About an hour later, 27 miles northwest of the destination, a witness saw the helicopter land in a field. The helicopter remained on the ground for a few minutes and when the witness approached the helicopter in their car, the helicopter quickly took off toward a large body of water and continued a flight path that was consistent with a direction to the planned destination. About an hour after the helicopter was last seen by this witness, family members alerted the United States Coast Guard (USCG) that the helicopter had not arrived at the destination.

The USCG conducted a search for the helicopter based upon cellphone location data and the next day small fragments of wreckage were located on the surface of the large body of water. The pilot and passenger were also recovered, and both had sustained fatal injuries. The small fragments of wreckage located were consistent with an impact at high velocity.

Based upon planned route of flight data collected from a flight planning application, cellphone location data, and the debris area, it is likely that after the brief off-airport landing, the pilot continued the flight toward the destination. A witness described conditions at the time as low clouds, misty, with restricted visibility across the water. An NTSB weather study found that near the location of where debris was found, about the presumed time of the accident,

widespread light to heavy precipitation, low clouds, and reduced visibility were present. There was no record that the pilot received an online or telephone weather briefing. Had the pilot received a weather briefing, forecasts would have alerted him of possible instrument meteorological conditions (IMC) and precipitation along his route.

Given that the pilot informed his friend shortly after takeoff that he would arrive in 1 hour, and made no mention of the weather, it is likely that he was not aware of the IMC and precipitation. It is likely that the pilot performed an unplanned off-airport landing due to the weather conditions ahead, and instead of terminating the flight, he chose to continue in what had become IMC. The pilot's attempted flight under visual flight rules in those conditions would have increased his likelihood of losing control of the helicopter due to spatial disorientation with no clear separation between the water surface and low clouds and obscuration of the horizon.

The pilot was not qualified to operate the helicopter in IMC, the helicopter was not approved for flight into IMC, and in addition, he possessed limited training to operate the helicopter in general. These findings make a mechanical problem with the helicopter an unlikely factor in the accident, however, the limited amount of wreckage found precluded the investigation from examining the helicopter for any evidence of preimpact mechanical malfunctions or failures.

The pilot's flight instructor was aware of the accident cross-country flight; however, the pilot was not issued any of the required endorsements or prerequisite training to conduct the flight. The flight instructor reported that this was not the first flight the pilot conducted in which he was not properly endorsed or authorized for. The investigation was unable to determine if the pilot understood that he was not legally authorized to conduct solo cross-country flights or carry passengers.

The flight instructor had authorized the pilot to perform solo flights, despite the student not holding the required student pilot and medical certificate. This deviation from regulations by the flight instructor likely contributed to the pilot's subsequent deviations from regulations and his decision to conduct the accident flight despite not being properly trained or endorsed for the accident flight.

Based on the pilot's toxicology results, at least some of the detected ethanol was likely from sources other than consumption. Whether ethanol effects contributed to the accident cannot be determined from available evidence.

Based on available medical and operational evidence, postmortem carbon monoxide production during prolonged water immersion likely increased the carboxyhemoglobin level in the pilot's cavity blood after his death. It is unlikely that carbon monoxide effects contributed to the accident.

## Probable Cause and Findings

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

The noncertificated pilot's decision to continue visual flight rules flight into instrument meteorological conditions, which resulted in spatial disorientation over a large body of water and a high velocity impact with the water. Contributing to the accident was the flight instructor's inadequate oversight during their initial training and improperly signing off the student for solo flight when he lacked the proper student pilot and medical certificate.

## Findings

|                             |  |
|-----------------------------|--|
| <b>Personnel issues</b>     | Qualification/certification - Student/instructed pilot   |
| <b>Personnel issues</b>     | Total instruct/training recvd - Student/instructed pilot |
| <b>Personnel issues</b>     | Decision making/judgment - Instructor/check pilot        |
| <b>Personnel issues</b>     | Spatial disorientation - Student/instructed pilot        |
| <b>Environmental issues</b> | Rain - Decision related to condition                     |
| <b>Environmental issues</b> | Thunderstorm - Decision related to condition             |
| <b>Environmental issues</b> | Low visibility - Decision related to condition           |
| <b>Aircraft</b>             | (general) - Not attained/maintained                      |
| <b>Aircraft</b>             | Instrument flight capability - Capability exceeded       |

## Factual Information

### History of Flight

|         |   |
|---------|---|
| Enroute | VFR encounter with IMC (Defining event) |
| Enroute | Collision with terr/obj (non-CFIT)      |

On July 19, 2021, about 1848 eastern daylight time, a Robinson Helicopter Company R44 II, N4529J, was destroyed when it impacted the Albemarle Sound near Point Harbor, North Carolina. The non-certificated pilot and passenger were fatally injured. The helicopter was operated by the pilot as a personal flight conducted under the provisions of Title 14 Code of Federal Regulations Part 91.

Review of surveillance video at the Mecklenburg-Brunswick Regional Airport (AVC), South Hill, Virginia, showed that the helicopter landed near the fueling station about 1710. The pilot and passenger (who was the pilot's brother) conducted refueling activities together. A fuel receipt showed about 32 gallons of 100-low lead were added. At 1722 the pilot and passenger boarded the helicopter, a hover taxi was initiated to runway 19, and the helicopter departed southbound from runway 19 at 1726.

Review of Federal Aviation Administration (FAA) automatic dependent surveillance- broadcast (ADS-B) data found that data was received for the first 2 minutes of the flight. The flight track headed southbound from runway 19, and then about 1.5 miles south of AVC, the flight track turned southeast and ended at 1728:52. No further radar or track data was located for the remainder of the flight.

A friend of the pilot reported that he received a FaceTime video call from the pilot shortly after the takeoff from AVC. The pilot told him he had just refueled and they would arrive at Manteo Airport [Dare County Regional Airport (MQI), Manteo, North Carolina] in 1 hour. The friend reported that everything seemed normal, and the pilot did not mention anything about weather conditions or the helicopter.

According to a witness located on the northwest side of the Albemarle Sound in Hertford, North Carolina, about 1830 she and her husband heard the sound of a low flying small helicopter. She observed a blue helicopter land in an open field that was about ½ mile from the shoreline. The witness reported that she and her husband got in their car to see if any assistance was needed; however, when they were about 50 ft from the helicopter it took off.

She reported that the takeoff was quick, it sounded like a normal helicopter, and it flew toward the Albemarle Sound in a southeast direction where it eventually exited out of view over the water. She added that the weather conditions over the water were low overcast clouds, it was misty, and you could not see the land across the Sound, which was something you could see on a nice day.

According to the United States Coast Guard incident commander, about 1940 they were notified of an overdue helicopter destined for MQI. A search was initiated over the Albemarle Sound based upon the last known position of cell phone data from pilot and passenger. The day after the accident, fragments of the helicopter were located floating on the surface of the Sound near  $36.029491^\circ$ ,  $-75.991991^\circ$  which was consistent with the general area of the cell phone position data. Figure 1 shows the cell phone position data from 1816 to the final reported position at 1848. In addition, the figure shows the location of the off airport landing, the general debris area, and unidentified primary radar targets recorded around the presumed accident time. It is not known which radar targets may have belonged to the helicopter.

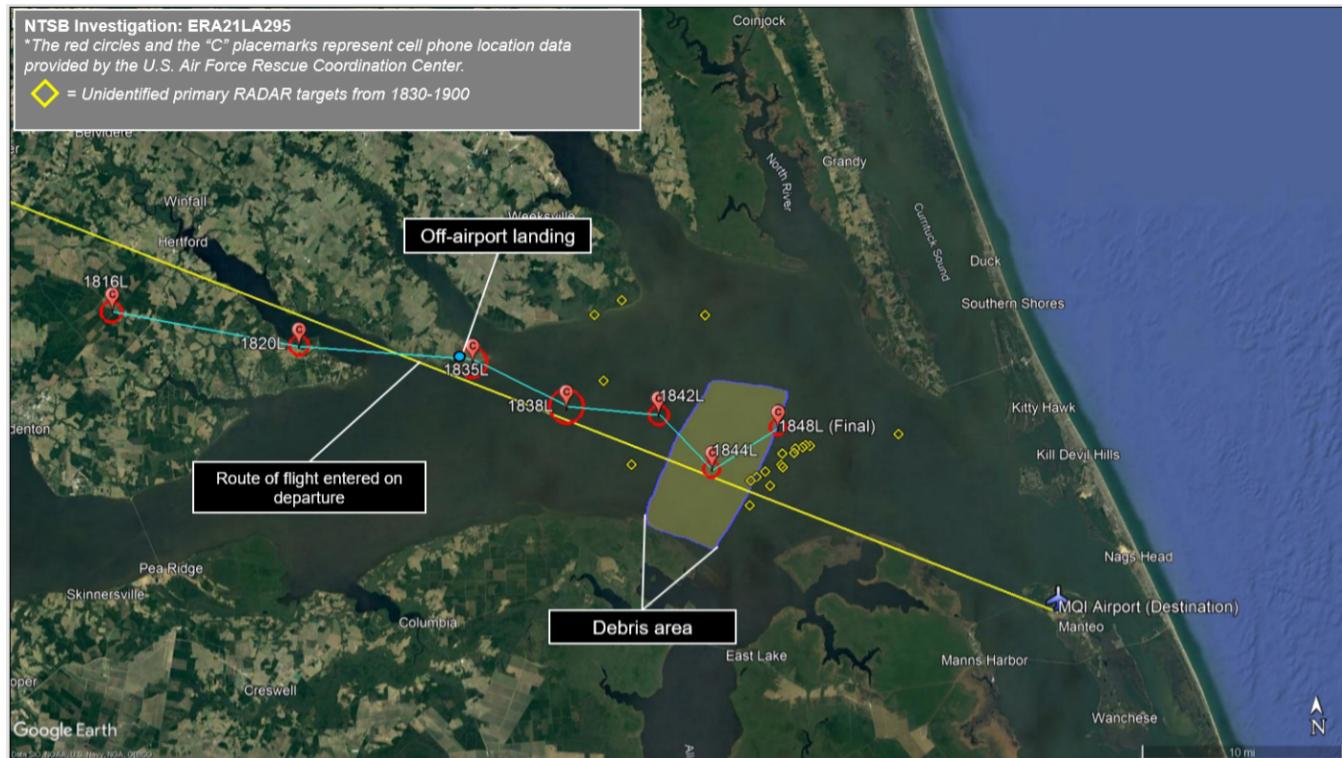


Figure 1: Overview of the cell phone location data, last known takeoff position, general debris area, and planned route of flight.

A limited number of small fragments of the helicopter were recovered. The pieces included seat cushions and fragments of the airframe in the area of the fuel tank. The debris displayed evidence of significant tearing and crushing. The limited amount of wreckage found precluded examining the helicopter for any evidence of preimpact mechanical malfunctions or failures.

An NTSB weather study found that weather radar and satellite imagery about the time of the accident over the debris area revealed areas of widespread light to heavy precipitation and areas of low clouds and visibility. According to Leidos Flight Service and ForeFlight, there was no record that the pilot requested an online weather briefing or called flight service. Thunderstorms and instrument flight rules conditions were forecasted for the accident area at the time of the accident. Figure 2 shows radar imagery about the time of the accident over the debris area.

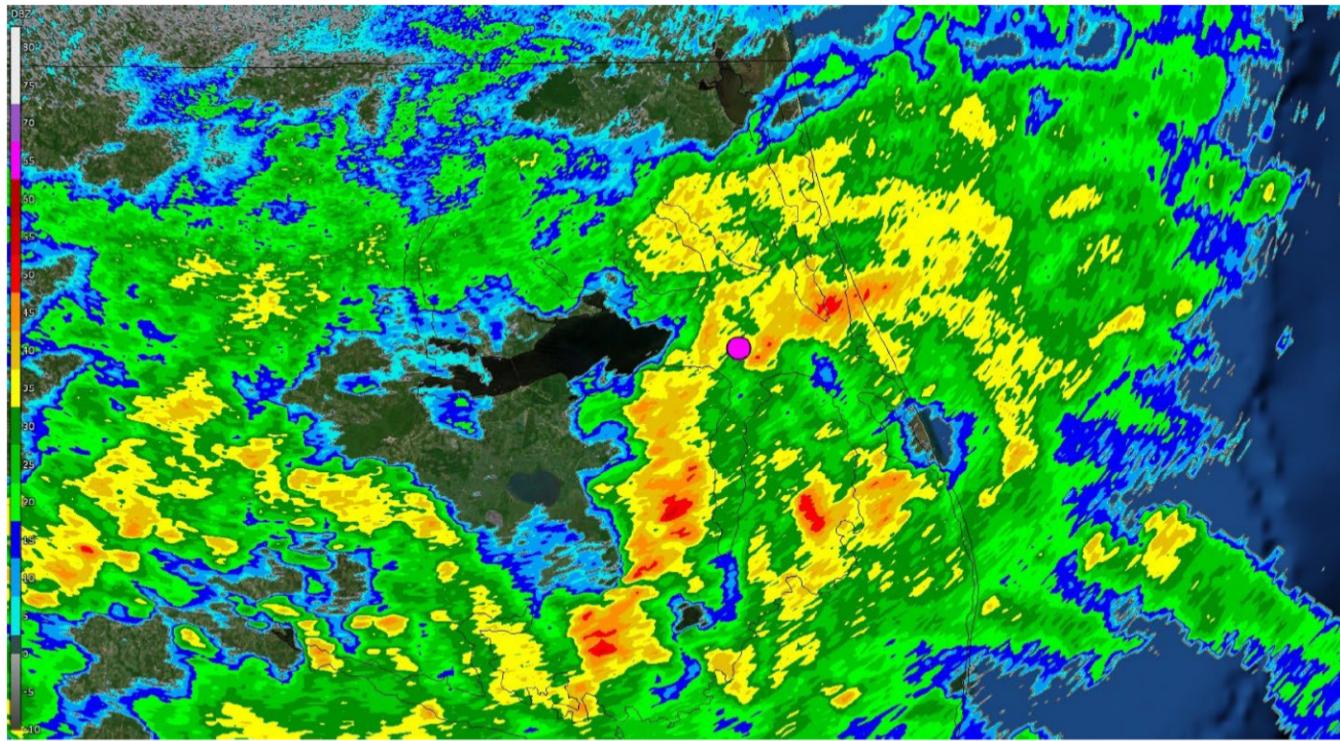


Figure 2: Radar reflectivity at 1848 and the accident area as denoted by the purple circle.

Review of FAA airman certification records found that the pilot did not hold a student pilot certificate nor any medical certificate. Records showed that the pilot applied for a third class medical on January 29, 2021; however, the issuance decision was deferred by the Aviation Medical Examiner due to the number of driving under the influence (DUI) infractions.

According to the flight instructor, the accident pilot began flight training with him in February 2021, 1 month after the accident pilot purchased the helicopter. The pilot based the helicopter at William M. Tuck Airport (W78), South Boston, Virginia. The flight instructor estimated that he provided about 20 hours of dual flight instruction to the pilot. The flight instructor reported that the pilot had received instruction from another flight instructor within his first 20 hours of training.

In early May 2021, the flight instructor signed the student off for supervised and local solo flight and the instructor estimated that he completed about 6 hours of solo flight under his supervision. The flight instructor said that during their course of training the accident pilot “implied” to him that he possessed a medical certificate; however, he never saw a copy of the medical certificate or a student pilot certificate. The pilot’s logbooks were not recovered.

On June 30, 2021, the accident pilot informed the flight instructor that he had relocated the helicopter’s base from W78 to his private residence in Glade Hill, Virginia, despite not having the proper endorsements or authorization from the flight instructor. The last dual flight training conducted was on May 28, 2021.

The flight instructor provided copies of text messages between he and the accident pilot from the afternoon of the accident. The pilot informed the flight instructor that he was going to fly through W78 for a fuel stop, and then down to "OBX for a fishing trip." The flight instructor responded in part that fuel service was not operable at W78, and the pilot responded that he might try AVC instead. The flight instructor reported that the accident pilot did not hold endorsements for any cross-country flights, and they had performed limited cross-country training. The flight instructor reported that it was his impression that the accident pilot "knew what the rules were" and further stated that "some people don't always play by the rules."

A friend of the pilot reported that about 1 month before the accident, the accident pilot shared with him that he was now "good to go on his own" but said that he needed more hours to get his "actual license." The pilot informed him that he could not fly passengers for hire. The friend reported that he was unsure of whether the pilot understood that he could not fly passengers under any circumstances.

The East Carolina University Brody School of Medicine, Department of Pathology and Laboratory Medicine, Division of Forensic Pathology performed the pilot's autopsy, at the request of the North Carolina Office of the Chief Medical Examiner. According to the autopsy report, the cause of death was multiple traumatic injuries. No thermal injury or airway soot was described. Changes associated with prolonged water immersion were noted. The autopsy did not identify significant natural disease.

The North Carolina Office of the Chief Medical Examiner performed toxicological testing of postmortem specimens from the pilot. This testing detected ethanol at 0.08 g/dL in cavity blood. The testing did not include measurement of carboxyhemoglobin.

The FAA Forensic Sciences Laboratory also tested postmortem specimens from the pilot. Ethanol was detected at 0.093 g/dL in cavity blood, 0.097 g/dL in muscle, and 0.148 g/dL in brain. N-propanol was detected in cavity blood, muscle, and brain. N-butanol was detected in brain. The carboxyhemoglobin level in cavity blood was measured to be elevated at 19%. Of note, no specimen was available for carboxyhemoglobin testing of the passenger in this accident.

According to the Pilot's Operating Handbook, visual flight rules (VFR) day and night operations were approved; however, flight into instrument meteorological conditions (IMC) was not.

According to 14 CFR § 61.23 and 61.87, a student pilot certificate and at least a 3rd class medical certificate were one of multiple requirements to solo the helicopter. Carrying passengers was also prohibited.

## Pilot Information

|                                  |  |  |         |
|----------------------------------|--|--|---------|
| <b>Certificate:</b>              | None   | <b>Age:</b>                              | 36,Male |
| <b>Airplane Rating(s):</b>       | None   | <b>Seat Occupied:</b>                    | Right   |
| <b>Other Aircraft Rating(s):</b> | None   | <b>Restraint Used:</b>                   | Unknown |
| <b>Instrument Rating(s):</b>     | None   | <b>Second Pilot Present:</b>             | No      |
| <b>Instructor Rating(s):</b>     | None   | <b>Toxicology Performed:</b>             | Yes     |
| <b>Medical Certification:</b>    | None None  | <b>Last FAA Medical Exam:</b>            |         |
| <b>Occupational Pilot:</b>       | No   | <b>Last Flight Review or Equivalent:</b> |         |
| <b>Flight Time:</b>              | (Estimated) 25 hours (Total, all aircraft), 25 hours (Total, this make and model), 10 hours (Pilot In Command, all aircraft) |  |         |

## Aircraft and Owner/Operator Information

|                                      |                             |                                       |                 |
|--------------------------------------|-----------------------------|---------------------------------------|-----------------|
| <b>Aircraft Make:</b>                | ROBINSON HELICOPTER COMPANY | <b>Registration:</b>                  | N4529J          |
| <b>Model/Series:</b>                 | R44 II NO SERIES            | <b>Aircraft Category:</b>             | Helicopter      |
| <b>Year of Manufacture:</b>          | 2009                        | <b>Amateur Built:</b>                 |                 |
| <b>Airworthiness Certificate:</b>    | Normal                      | <b>Serial Number:</b>                 | 12683           |
| <b>Landing Gear Type:</b>            | None; Skid                  | <b>Seats:</b>                         | 4               |
| <b>Date/Type of Last Inspection:</b> | Unknown                     | <b>Certified Max Gross Wt.:</b>       | 2500 lbs        |
| <b>Time Since Last Inspection:</b>   |                             | <b>Engines:</b>                       | 1 Reciprocating |
| <b>Airframe Total Time:</b>          |                             | <b>Engine Manufacturer:</b>           | Lycoming        |
| <b>ELT:</b>                          | Not installed               | <b>Engine Model/Series:</b>           | IO-540-AE1A5    |
| <b>Registered Owner:</b>             | Star Quest LLC.             | <b>Rated Power:</b>                   |                 |
| <b>Operator:</b>                     | On file                     | <b>Operating Certificate(s) Held:</b> | None            |

## Meteorological Information and Flight Plan

|                                  |                       |                                      |                   |
|----------------------------------|-----------------------|--------------------------------------|-------------------|
| Conditions at Accident Site:     | Instrument (IMC)      | Condition of Light:                  | Day               |
| Observation Facility, Elevation: | MQI, 14 ft msl        | Distance from Accident Site:         | 16 Nautical Miles |
| Observation Time:                | 18:55 Local           | Direction from Accident Site:        | 115°              |
| Lowest Cloud Condition:          | 3200 ft AGL           | Visibility                           | 3 miles           |
| Lowest Ceiling:                  | Broken / 3200 ft AGL  | Visibility (RVR):                    |                   |
| Wind Speed/Gusts:                | 7 knots /             | Turbulence Type Forecast/Actual:     | None / None       |
| Wind Direction:                  | 70°                   | Turbulence Severity Forecast/Actual: | N/A / N/A         |
| Altimeter Setting:               | 30.01 inches Hg       | Temperature/Dew Point:               | 23°C / 22°C       |
| Precipitation and Obscuration:   | Light - None - Rain   |                                      |                   |
| Departure Point:                 | Mecklenburg, VA (AVC) | Type of Flight Plan Filed:           | None              |
| Destination:                     | Manteo, NC (MQI)      | Type of Clearance:                   | None              |
| Departure Time:                  | 17:26 Local           | Type of Airspace:                    | Class G           |

## Wreckage and Impact Information

|                     |         |                      |                           |
|---------------------|---------|----------------------|---------------------------|
| Crew Injuries:      | 1 Fatal | Aircraft Damage:     | Destroyed                 |
| Passenger Injuries: | 1 Fatal | Aircraft Fire:       | None                      |
| Ground Injuries:    | N/A     | Aircraft Explosion:  | None                      |
| Total Injuries:     | 2 Fatal | Latitude, Longitude: | 36.029491,-75.991991(est) |

## Preventing Similar Accidents

Manage Risk: Good Decision-making and Risk Management Practices are Critical (SA-023)

## **The Problem**

Although few pilots knowingly accept severe risks, accidents can also result when several risks of marginal severity are not identified or are ineffectively managed by the pilot and compound into a dangerous situation. Accidents also result when the pilot does not accurately perceive situations that involve high levels of risk. Ineffective risk management or poor aeronautical decision-making can be associated with almost any type of fatal general aviation accident.

## **What can you do?**

- Develop good decision-making practices that will allow you to identify personal attitudes that are hazardous to safe flying, apply behavior modification techniques, recognize and cope with stress, and effectively use all resources. Understand the safety hazards associated with human fatigue and strive to eliminate fatigue contributors in your life.
- Understand that effective risk management takes practice. It is a decision-making process by which you can systematically identify hazards, assess the degree of risk, and determine the best course of action.
- Be honest with yourself and your passengers about your skill level and proficiency. 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 and the FAA about your medical condition. If you have a medical condition or are taking any medication, do not fly until your fitness for flight has been thoroughly evaluated.
- Plan ahead with flight diversion or cancellation alternatives, and brief your passengers about the alternatives before the flight.

See <https://www.ntsb.gov/Advocacy/safety-alerts/Documents/SA-023.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

|  |   |
|--|---|
| <b>Investigator In Charge (IIC):</b>     | Gerhardt, Adam  |
| <b>Additional Participating Persons:</b> | Francis Lauterborn; FAA/ FSDO; Greensboro, NC   |
| <b>Original Publish Date:</b>            | June 8, 2023  |
| <b>Last Revision Date:</b>               | May 16, 2024  |
| <b>Investigation Class:</b>              | <a href="#">Class 3</a>   |
| <b>Note:</b>                             | The NTSB did not travel to the scene of this accident.  |
| <b>Investigation Docket:</b>             | <a href="https://data.ntsb.gov/Docket?ProjectID=103522">https://data.ntsb.gov/Docket?ProjectID=103522</a> |

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, "accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person" (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB's statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).