National Transportation Safety Board
Office of Research and Engineering
Washington, D.C. 20594

Performance Study

Specialist Report
Marie Moler

A. ACCIDENT

Location:	Brownsville, Tennessee
Date:	April 20, 2021
Time:	20:52 central daylight time (CDT)
Airplane:	Piper PA-28RT, N4303G
NTSB Number:	ERA21FA189

B. SUMMARY

On April 20, 2021, at 2052 central daylight time, a Piper PA-28RT-201T airplane, N4303G, was destroyed when it was involved in an accident near Brownsville, Tennessee. The student pilot and passenger were fatally injured. The airplane was operated as a personal flight conducted under the provisions of Title 14 *Code of Federal Regulations* Part 91.

C. PERFORMANCE STUDY

This performance study is based on Automatic Dependent Surveillance-Broadcast (ADS-B) data provided by the Federal Aviation Administration (FAA). ADS-B broadcasts an airplane's Global Positioning System (GPS) position and other data to the ground where it is recorded. The GPS position has an accuracy of approximately 20 meters (m) in both the horizontal and vertical dimensions.

Weather was recorded at the Covington Municipal Airport (KM04), approximately 11 miles from the accident site. Temperatures were reported as 41°F (5°C), the dew point was 39°F (4°C), and the barometric setting was 30.11 inHg. Winds were 18 kts from 350°. Skies were overcast at 1,200 ft. The NTSB meteorology report [1] stated that cloud cover continued up to 13,500 ft.

The airplane took off from Pearland Regional Airport in Pearland, Texas at about 17:20 CDT (Figure 1). It climbed to about 9,500 ft mean sea level (msl) (Figure 2) before beginning to descend about 19:45. By 20:50, the airplane was level at 7,300 ft and a calibrated airspeed of 160 kts.

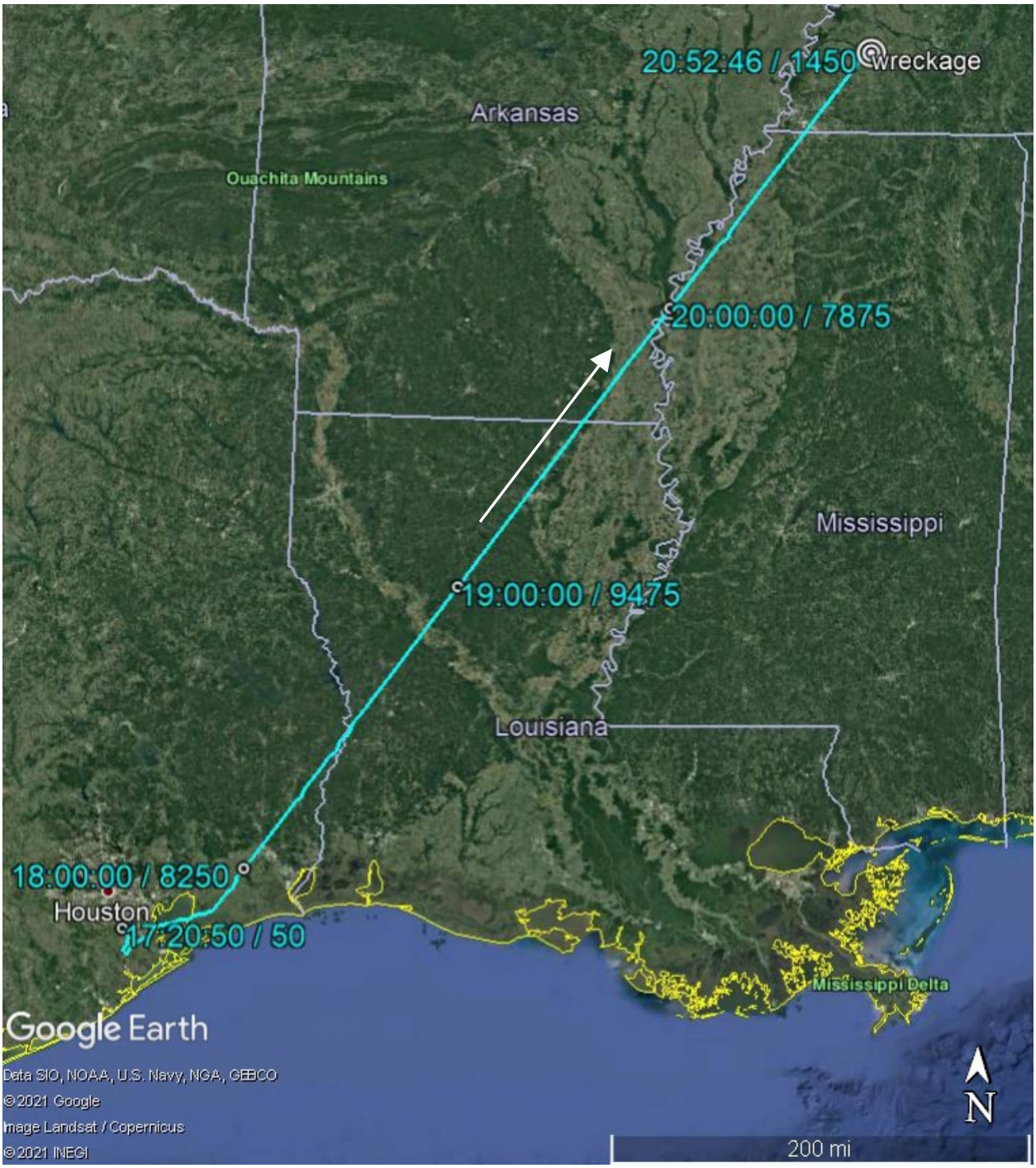

Figure 1. Accident flight in blue with select times and altitudes (msl) annotated in blue.

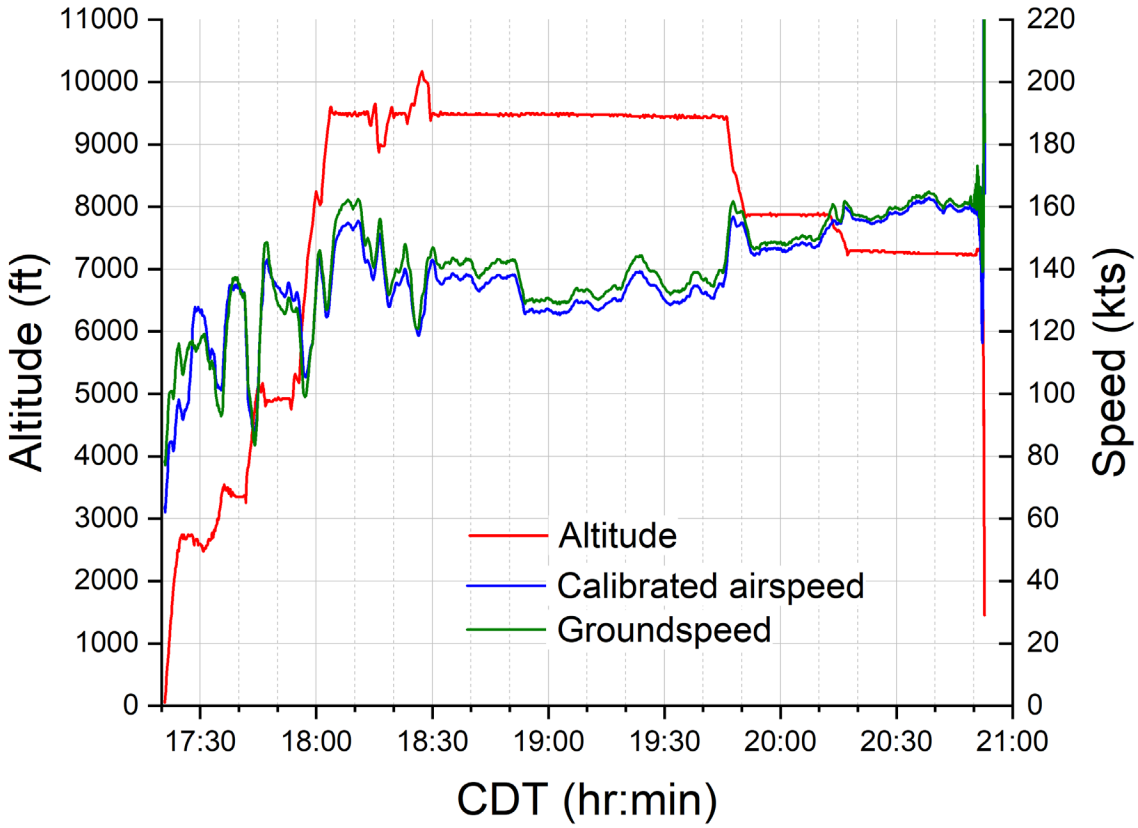

Figure 2. Altitude (msl) and calculated groundspeed and calibrated airspeed.

At 20:50:19, the accident airplane pilot contacted the Memphis Air Route Traffic Control Center (labeled ZME in Figure 3 and Figure 4) and stated he was going to begin the descent to his final destination (Kyle-Oakley Field in Murray, Kentucky, approximately 85 NM away) [2]. The air traffic controller (ATC) replied with weather conditions and stated that "everything between now and Kyle-Oakley is on the verge of being IFR conditions". At 20:51, the airplane's track angle began to turn right, leaving its prior 35° heading (Figure 4). The accident pilot responded affirmative and that he would descend to 2,300 ft to "have plenty of clearance for anything that's not updated …on my screen". ATC replied to maintain visual flight rules (VFR) conditions and to report if he entered instrument flight rules (IFR) or instrument meteorological conditions (IMC). ATC also suggested to "go over to the east a little bit to stay out of the weather" which the accident pilot repeated back. At this point, however, the airplane had turned through 90° due east, the turn was tightening, and the airplane had begun to descend (Figure 5).

The meteorology report showed that the accident site was on edge of precipitation and clouds. Cloud coverage in the area of the accident was reported as layered clouds from 1,200 ft to 13,500 ft.

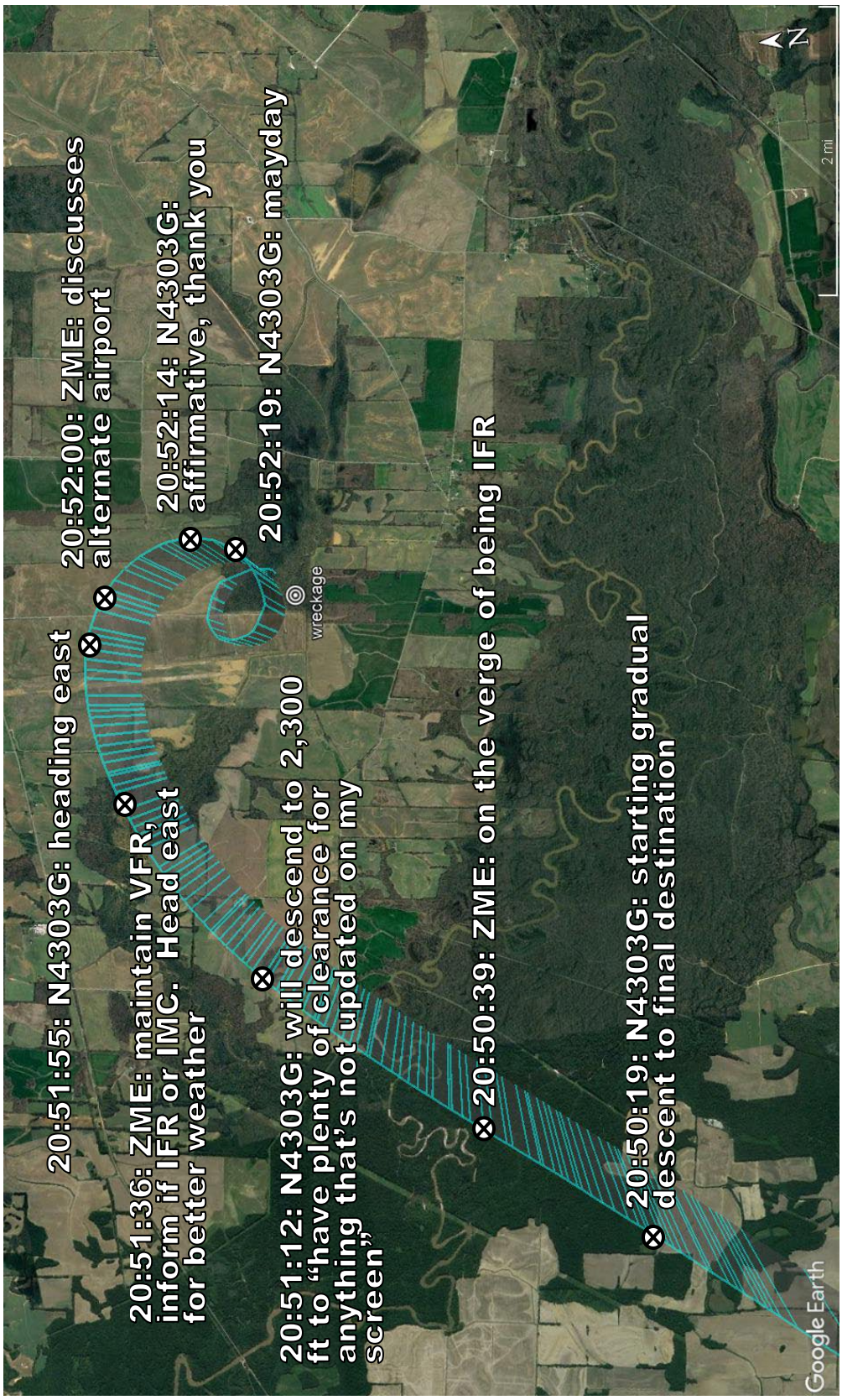

Figure 3. End of flight with ATC paraphrasing. N4303G is the accident airplane and ZME is Memphis Air Route Traffic Control Center.

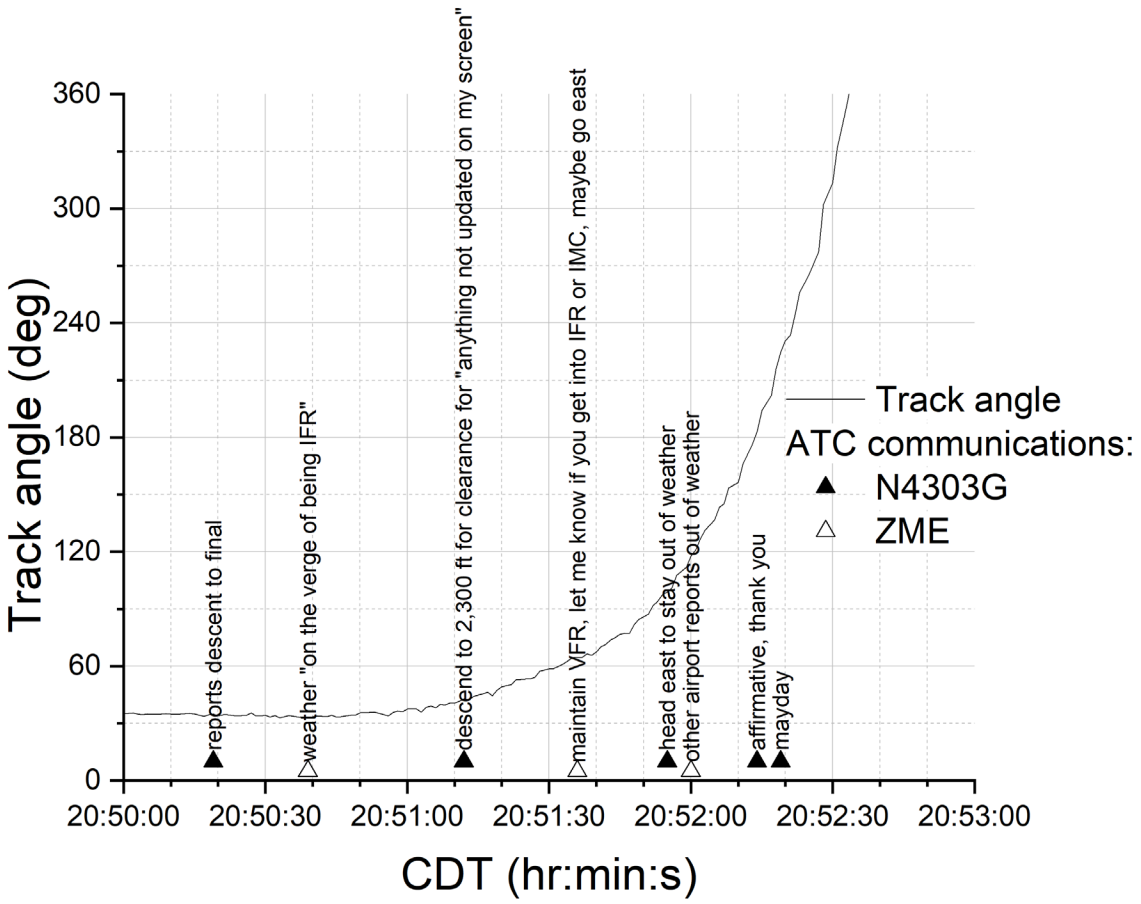

Figure 4. End of flight track angle with ATC paraphrasing.

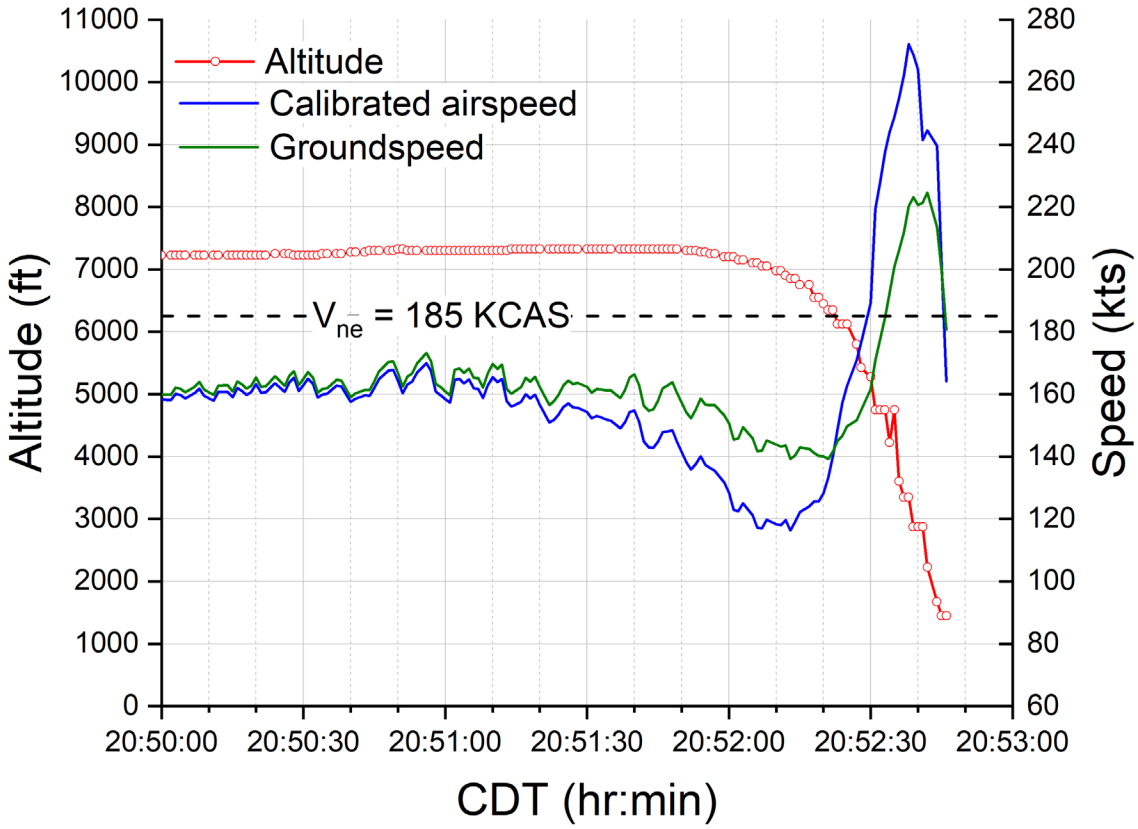

Figure 5. End of flight altitude (msl) and calculated groundspeed and calibrated airspeed.

The right turn began at 20:51 (Figure 4) and the descent at 20:51:50 (Figure 5). Initially, the airplane slowed from 160 kts calibrated airspeed to 120 kts by 20:52:10. At 20:52, ATC gave additional weather information and at 20:52:14, the accident pilot responded "affirmative, thank you". At 20:52:19, the pilot radioed "mayday". The airplane was then 1,000 ft below its earlier altitude and its speed was 125 kts calibrated airspeed.

The airplane then rapidly gained airspeed, the descent accelerated, and the turn tightened. At 20:52:29 the airplane exceeded it's Do Not Exceed Speed (V_{NE}) of 185 kts calibrated airspeed. The final recorded data point was at 20:52:46 at an altitude of 1,450 ft. The wreckage was located 1,000 ft farther along the curving flight path at an elevation of 300 ft.

D. CONCLUSIONS

The airplane's airspeed, altitude, and heading were steady as it approached the accident area. ATC reported deteriorating weather conditions and cloud cover between the airplane and its intended destination. The airplane began to turn to the right before the pilot and ATC discussed the possibility of better weather conditions to the east. As the right turn tightened and the airplane descended, the pilot continued to talk with ATC. The pilot communicated "mayday" as the airplane began to rapidly gain airspeed and lose altitude. The airplane exceeded its V_{NE} speed as it descended. The wreckage location was consistent with the airplane continuing its tightening right turn to the ground impact.

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E. REFERENCES

1. Weather Study, CEN21FA189, National Transportation Safety Board, 2021.
2. Air Traffic Control Partial Transcript, CEN21FA189, National Transportation Safety Board, 2021.