NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

April 8, 2020

Specialist's Report

AIR TRAFFIC CONTROL

ERA19FA130

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A. ACCIDENT

Location: Cashiers, North Carolina
Date: March 14, 2019
Time: 1815 eastern daylight time (EDT)
2215 coordinated universal time (UTC)
Airplane: Mooney M20C, N6075Q

B. AIR TRAFFIC CONTROL INVESTIGATOR

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Group Chairman
Operational Factors Division (AS-30)
National Transportation Safety Board

C. SUMMARY

On March 14, 2019, at 1815 eastern daylight time, a Mooney M20C, N6075Q, departed controlled flight and collided with mountainous terrain near Cashiers, North Carolina. The commercial pilot was fatally injured, and the airplane was destroyed. Day instrument meteorological conditions prevailed, and an instrument flight rules (IFR) flight plan was filed for the personal flight which was conducted under the provisions of Title 14 Code of Federal Regulations Part 91. The flight departed Knoxville Downtown Island Airport (DKX), Knoxville, Tennessee, at 1724, and was enroute to Aiken Regional Airport (AIK), Aiken, South Carolina.

D. FACILITY INFORMATION

1.0 History of Flight

At 2143:37 N6075Q contacts Atlanta Air Route Traffic Control Center (ZTL ARTCC) sector R49 and reported level at 9,000 feet. The R49 controller acknowledged the pilot and issued the Knoxville altimeter of 29.92.

At 2158:59, the R49 controller contacted the pilot of N6075Q and asked, “are you alright up there it looks like you took a pretty good turn”. The pilot responded, “I’m correcting now”.

At 2200:06, the R49 controller cleared the pilot of N6075Q direct to Aiken South Carolina (AIK), the pilot read back the clearance.

At 2202:14, the R49 controller told the pilot it appeared he was “over correcting to the left do you need a heading for Aiken er”. The pilot of N6075Q responded “I’ve lost my ah (unintelligible)”. The R49 controller asked the pilot if he had lost his altimeter and the pilot responded he had lost his attitude indicator and clarified “artificial horizon”. The R49 controller acknowledged the pilot.

At 2205:01, the R49 controllers asked the pilot “are you in the clouds there are you good um is that attitude being out ah gonna be an issue for you I don’t have anyone currently around

you there if its going to be a problem for you I am just curious". The pilot responded that he was "IMC" referring to instrument meteorological conditions.

At 2205:32, the R49 controller asked the pilot if he would like a climb or if he was good at 9,000 feet. The pilot of N6075Q responded by asking if there was a lower altitude. The R49 controller assigned the pilot 7,200 feet and informed the pilot he could have lower "in a minute". There was a break in the frequency but not audible voice.

At 2207:58, the R49 controller transmitted "N6075Q you looking for some ah trying to find some air there or some clear skies rather". The pilot of N6075Q responded with an unintelligible transmission. The R49 controller asked the pilot to say again and asked again if he was looking for some clear air. There was no response from the pilot of N6075Q.

At 2208:30, the R49 controller asked the pilot of N6075Q "are you still with me". There was no response.

At 2208:56, the R49 controller asked the pilot of N6075Q "how do you hear". The pilot responded with a transmission that was partially unintelligible and finished the transmission with "I'm trying to get my speed down here". The R49 controller responded "okay ah I just want to make sure you are doing alright I just couldn't hear you there ah kinda going up and down on the altitude so the lowest I can get you in your current ah spot is 7,200 if you can figure out how to head back further southbound I can start you down a little lower unless you do want to climb its up to you". The pilot of N6075Q responded that he was still IMC and the rest was unintelligible.

The air traffic control responsibility for N6075Q was given to the ZTL ARTCC R18 sector who took over the frequency and began working the aircraft.

At 2210:36, the R18 controller established communications with the Pilot of N6075Q and issued the Ashville altimeter of 30.09. The controller instructed the pilot to "focus on keeping your wings level and flying south do you see any visual conditions". The pilot responded he was IMC. At 2211:15, the R18 controller advised the pilot that ZTL was working on finding visual conditions and instructed the pilot to "fly south as best as you can and maintain wings level". There was no reply from the pilot.

At 2211:46, the R18 controller asked the pilot of N6075Q if he was wings level; the pilot responded that he was IMC. The R18 controller transmitted "I understand your attitude indicator has ah failed on you do you still have your heading indicator is your heading still working". The pilot responded, "I don't believe, I don't believe". The R18 controller acknowledged the pilot and transmitted "what appears to me is you've been in a slight turn a shallow turn for the last several minutes does your compass work does your magnetic compass work". The pilot responded the compass works.

At 2212:23, the R18 controller asked the pilot of N6075Q if he had an "electric powered wings ah turn indicator that you can use to keep your wings level". The pilot responded negative. The controller responded " I am hoping that your electric turn indicator will help you with wings level if you can use that to keep your wings level and your magnetic compass to give you a heading

we can get you turned south we just want to take you south". There was no reply from the pilot of N6075Q.

At 2213:11, the R18 controller advised the pilot of N6075Q " I've been showing you in a shallow left turn for the last several minutes if you can just stop your turn whatever heading you're on if you can just keep your wings level and head south and stop your turn that should help us out and get you lower". The response from the pilot was unintelligible.

At 2213:57, the R18 controller asked the pilot of N6075Q if the aircraft was under control. The pilot responded the aircraft was "somewhat under control" and the remainder of the transmission was unintelligible. The controller acknowledged the pilot and advised the pilot it appeared the aircraft was on about a 310-degree heading currently heading northwest bound and the altitude is 6,500 you are below the MIA (minimum IFR altitude). The pilot responded was difficult to understand.

At 2214:29, the R18 controller instructed the pilot to "do one thing at a time just ah do ah try to do a climb only right now if you can climb up ah just a slow climb to about 8,000 that will work". There was no response from the pilot.

At 2215:20 the R18 controller advised the pilot of N6075Q that radar contact was lost. There were no further communications with the pilot.

2.0 Radar Data

In general, two types of radar are used to provide position and track information for aircraft cruising at high altitudes between airport terminal airspaces, and for those operating at low altitude and speeds within terminal airspaces.

Air Route Surveillance Radars (ARSRs) are long range (250 nautical mile) radars used to track aircraft cruising between terminal airspaces. ARSR antennas rotate at 5 to 6 RPM, resulting in a radar return every 10 to 12 seconds; there is no weather data associated with the radar return. Airport Surveillance Radars (ASRs) are short range (60 nautical mile) radars used to provide air traffic control services in terminal areas. ASR antennas rotate at 13 to 14 RPM, resulting in a radar return every 4.6 to 5 seconds. The ASR is capable of detecting precipitation and displaying it as six levels of precipitation on the controllers display or the tower display workstation (TDW. The weather data is updated every 60 seconds.

A radar detects the position of an object by broadcasting an electronic signal that is reflected by the object and returned to the radar antenna. These reflected signals are called primary returns. Knowing the speed of the radar signal and the time interval between when the signal was broadcast and when it was returned, the distance, or range, from the radar antenna to the reflecting object can be determined. Knowing the direction the radar antenna was pointing when the signal was broadcast, the direction (or bearing, or azimuth) from the radar to the object can be determined. Range and azimuth from the radar to the object define the object's position.

To improve the consistency and reliability of radar returns, aircraft are equipped with transponders that sense beacon interrogator signals broadcast from radar sites, and in turn broadcast a response signal. Even if the radar site is unable to sense a weak reflected primary return, it will sense the response signal broadcast by the transponder and be able to determine the aircraft position. The response signal can also contain additional information, such as the identifying "beacon code" for the aircraft, and the aircraft's pressure altitude (also called "Mode C" altitude). Transponder signals received by the radar site are called secondary returns. N6075Q was assigned a beacon code of 5237.

Radar data for this report was obtained from the Federal Aviation Administration (FAA) Knoxville Tennessee (TYS) ASR's. The TYS plot playback (PPB) data was useable, of good quality, and was part of the standard terminal automation replacement system (STARS). Figure 1 is the full flight track from the departure airport to the accident site. Figure 2 shows the accident segment when the aircraft begins to deviate from the assigned route. Figure three shows the last radar target.

Figure 1 - Figure 1 is the full flight track from the departure airport to the accident site.

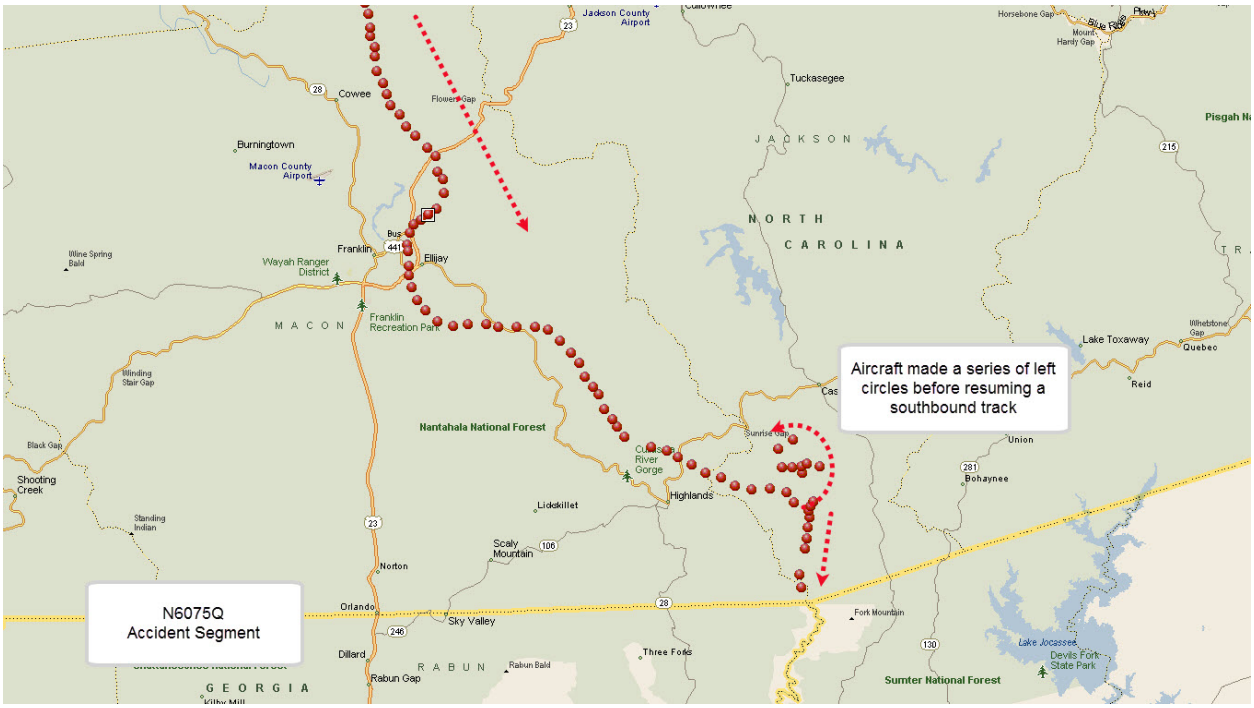

Figure 2 -Accident segment track

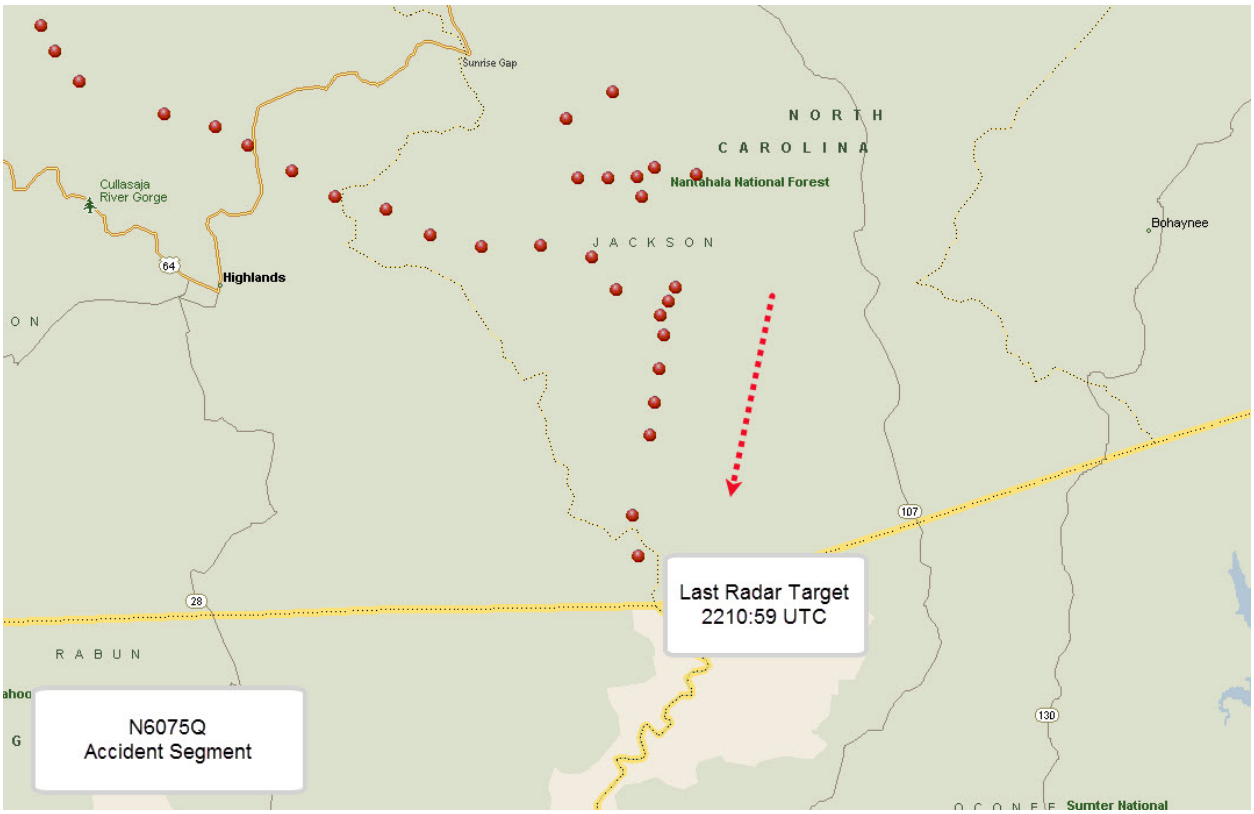

Figure 3 – Figure showing last radar target.

Submitted by:

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