



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

April 10, 2022

Group Chairman's Factual Report

AIR TRAFFIC CONTROL

ERA20FA118

A. ACCIDENT

Location: Bishop, Georgia
Date: March 3, 2020
Time: 1634 eastern standard time (EST)¹
2134 coordinated universal time (UTC)
Airplane: PA 46-310P, N43368

B. AIR TRAFFIC CONTROL GROUP

Group Chair	Brian Soper National Transportation Safety Board (NTSB) Washington, DC
Group Member	Jeffrey Hall Federal Aviation Administration (FAA) College Park, GA
Group Member	Amy Huschka National Air Traffic Controllers Association (NATCA) Minneapolis, MN

C. SUMMARY

On March 3, 2020, about 1634 eastern standard time, a Piper PA-46-310P, N43368, was destroyed when it was involved in an accident near Bishop, Georgia. The pilot and two passengers were fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

D. DETAILS OF THE INVESTIGATION

The air traffic control (ATC) group was formed on March 5, 2020, after preliminary information indicated concern with the ATC services provided to the accident flight. The group consisted of the chair from the NTSB, a subject matter expert from the FAA, and an air safety investigator from the NATCA. Also embedded with the group was a Senior Meteorologist from the NTSB².

¹ All times are in eastern standard time (EST) unless otherwise noted.

² An NTSB Senior Meteorologist joined the ATC group during the field phase of the investigation, however, was not a member of the ATC group and separate Meteorological reports are located in the public docket

Via the FAA compliance services group (CSG), the group requested controller schedules, flight track surveillance data, voice recordings, standard operating procedures (SOP), event playbacks, weather advisory documentation, and various other personnel and administrative records pertaining to the event.

On March 12, the group met at the Atlanta Terminal Radar Approach Control (A80 TRACON) and was provided with an in-brief from the air traffic manager (ATM) and several members of his staff. Also present at the in-brief were members from the FAA's CSG, eastern service area quality control group (ESA QCG), and office of chief counsel. The group was then provided with an operational tour of the control floor with emphasis on the area that had provided services to the accident aircraft, as well as the traffic management unit (TMU). The group was then provided with a STARS³ maintenance replay of the event to better understand what was displayed on the controller's radar display at the time of the accident. The group then conducted interviews with the Athens Radar (RA) controller and Satellite Controller In-Charge (SS CIC) that were working at the time of the accident⁴.

On March 13, the group completed field notes, obtained concurrence, and concluded the field phase of the ATC investigation.

E. FACTUAL INFORMATION

1.0 History of Flight

The following is a timeline and sequence of events leading up to the accident. Information was obtained from the FAA Aircraft Accident Package⁵, certified audio re-recordings⁶ and radar data. All times are rounded to the nearest minute and altitudes are in feet (ft) above mean sea level (msl). This timeline does not contain every communication exchange between ATC and the accident pilot, but rather provides a sequence of events from the time N43368 departed CAE until the time of the accident. ATC services were provided by Columbia Airport Traffic Control Tower (CAE ATCT), Augusta (AGS) ATCT, and A80 TRACON.

1519 The pilot of N43368 was provided his IFR clearance to Tuscaloosa National Airport (TCL). Additionally, after confirming with the pilot, the CAE ATCT

³ STARS – Standard Terminal Automation Replacement System – A system that receives radar data and flight plan information and presents the information to air traffic controllers on high resolution, 20" x 20" color displays allowing the controller to monitor, control, accept hand-off of air traffic, and assist with weather avoidance.

⁴ Interview summaries of the controllers interviewed are included in Attachment 1: Controller Interview Summaries.

⁵ A copy of the full aircraft accident package is provided in Attachment 2: Aircraft Accident Package.

⁶ A partial transcript of the ATC audio recordings pertaining to the accident flight are included in Attachment 3: ATC Audio Partial Transcript.

GC controller removed an additional clearance that the pilot had in the system to Houston Southwest Airport (AXH).

- 1523 N43368 taxied to the run-up area for runway (RWY) 23.
- 1528 The CAE ATCT GC controller asked the pilot of N43368 how long it would be until they were ready to go, to which the pilot stated he was ready. N43368 was then cleared for takeoff from RWY 23 with instructions to fly heading 290 after departure. The pilot acknowledged with a correct readback.
- 1529 N43368 departed RWY 23.
- 1530 The pilot of N43368 contacted the CAE ATCT departure radar (DC) controller and reported climbing through 1,500 ft for 4,000 ft. The controller acknowledged.
- 1534 The CAE ATCT DC controller cleared N43368 direct to TCL. The pilot acknowledged with a correct readback.
- 1535 The CAE ATCT DC controller instructed the pilot of N43368 to climb and maintain 6,000 ft. The pilot acknowledged.
- 1541 The CAE ATCT DC controller instructed the pilot of N43368 to contact AGS ATCT. The pilot acknowledged.
- 1542 The pilot of N43368 checked in with the AGS ATCT radar east (RE) controller level at 6,000 ft. The controller acknowledged and provided the AGS altimeter setting.
- 1549 The pilot of N43368 requested to deviate 10° left for weather. The controller approved the request and instructed the pilot to advise when back on course. The pilot acknowledged.
- 1553 The pilot of N43368 advised the AGS ATCT RE controller that he was back on course to TCL. The controller acknowledged.
- 1557 The AGS ATCT RE controller broadcast a hazardous weather advisory and advised that more information was available on flight service frequency.
- 1613 The AGS ATCT RE controller instructed the pilot of N43368 to contact A80 TRACON. The pilot acknowledged, and several seconds later checked in with the A80 TRACON RA controller level at 6,000 ft.
- 1614 The A80 TRACON RA controller broadcast hazardous weather information valid until 0300 UTC for Georgia, Alabama, Tennessee, North and South Carolina warning of potential IFR conditions, mountain obscuration, turbulence from the surface to 16,000 ft, and moderate icing with freezing levels from 9,000 to 13,000 ft.
- 1615 The A80 TRACON RA controller advised the pilot of N43368 that he would need to be re-routed around Atlanta's airspace and asked if he would

rather go north or south. The pilot requested to go to the north.

- 1618 After coordinating with the appropriate ATC facility, the A80 TRACON RA controller provided an amended routing to the pilot of N43368 from his present position to the LOGEN intersection, then DALAS intersection, then direct TCL. The pilot acknowledged with a correct readback.
- 1620 The pilot of N43368 requested to deviate ten degrees left to avoid build-up. The A80 TRACON RA controller approved the request and advised the pilot that it looked like he would be past a line of weather off his right side in about 15-20 miles. The pilot acknowledged.
- 1628 The A80 TRACON RA controller advised the pilot of N43368 that there was going to be a gap in the line of weather in about eight miles, with just some light precipitation to go through, then could continue direct LOGEN once on the north side. The pilot acknowledged.
- 1630 The A80 TRACON RA controller instructed the pilot of N43368 to fly heading 300°. The pilot acknowledged, then a few seconds later advised that the 300° heading was pointing them straight toward a build-up in the weather.
- 1631 The A80 TRACON RA controller advised the pilot that the weather the pilot referenced was the weather he had advised him of previously. Then advised that the 300° heading would keep him south of the heavy precipitation, but that There would be some light precipitation and then in about eight miles he would turn him north and then there would be about three miles of light precipitation to fly through. The pilot acknowledged with apprehension about that routing, and the controller then advised that if he did not want to accept that routing that he would need to turn southbound and fly around Atlanta to the south. The pilot subsequently elected to turn right.
- 1632 The A80 TRACON RA controller instructed the pilot of N43368 to fly heading 300°, and that would keep him out of the moderate precipitation. The pilot acknowledged, turning northbound and said that he thought he was shooting the gap and felt he could go straight through. The controller acknowledged and advised that it looked like he was going to enter moderate precipitation in about one mile and that it would extend for about four miles northbound. The pilot acknowledged.
- 1633 The A80 TACON RA controller asked the pilot of N43368 what his flight conditions were, and the pilot responded, "rain three six eight." (There were no further transmissions received from the pilot of N43368.)

Several additional attempts were made to contact N43368 to include relay through another airborne aircraft in the area, with no success.

2.0 Surveillance Data and Radar Playback Information

2.1 Airport Surveillance Radar

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 that 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. Over the course of the accident flight, N43368 was transmitting on discrete beacon code 0767 from the time it departed CAE until the time that radar data was lost.

Radar data was provided by the FAA and included source data from several surveillance radars in the southeast region of the accident⁷.

2.2 Automatic Dependent Surveillance - Broadcast

ADS-B is a surveillance technology in which an aircraft determines its position via satellite navigation and periodically broadcasts it, enabling it to be tracked. The information can be received by ATC ground stations as a replacement for secondary surveillance radar, as no interrogation signal is needed from the ground. It can also be received by other aircraft to provide situational awareness and allow self-separation. ADS-B is "automatic" in that it requires no pilot or external input. It is "dependent" in that it depends on data from the aircraft's navigation system.

ADS-B data were provided by the FAA⁸. Figure 1 below illustrates the entire accident flight track with first/last ADS-B points indicated, as well as airport of

⁷ Radar data for the final portion of the accident flight is provided in Attachment 4: FAA Radar Data.

⁸ ADS-B data for the entire accident flight are provided in Attachment 5: FAA ADS-B Data.

departure and area of the accident. Altitudes are in ft above msl shown in 100 ft increments and may vary from those altitudes seen in radar data.

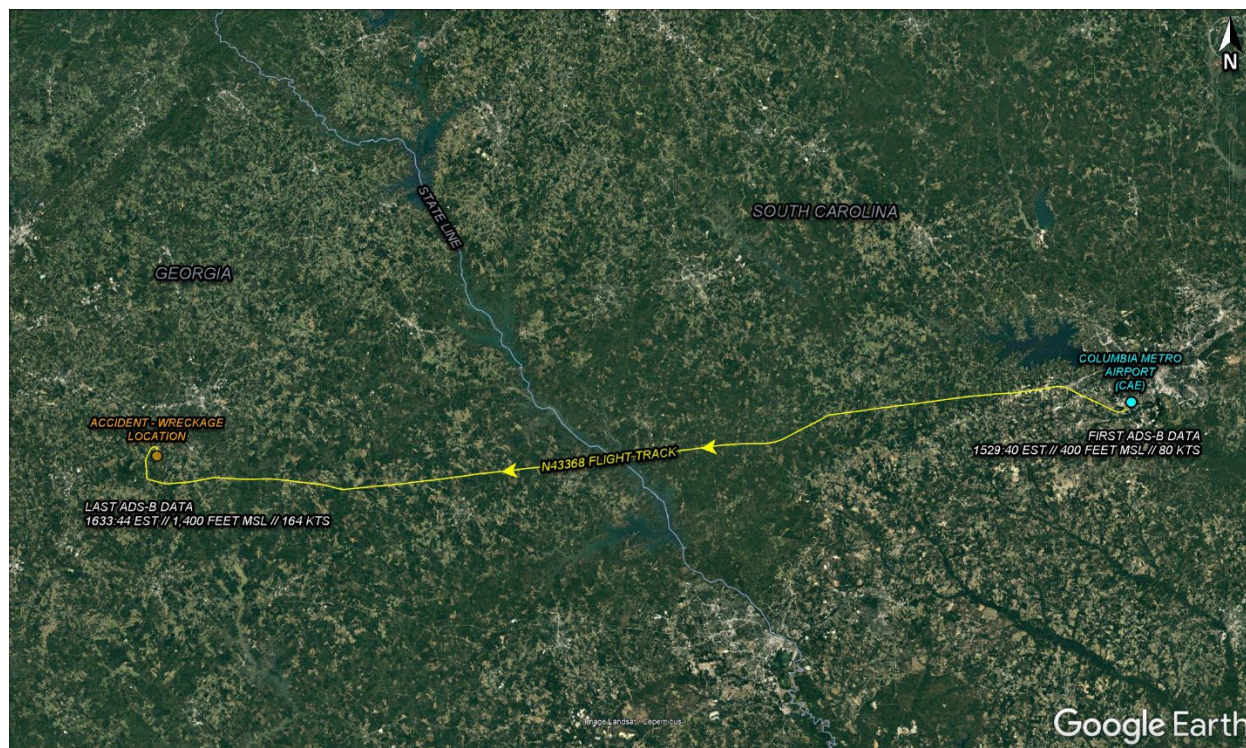


Figure 1. Overview of accident flight track - ADS-B Data.

2.2.1 Flight Information System - Broadcast

The airplane was equipped and could receive Flight Information System - Broadcast (FIS-B) information.

FIS-B is a data broadcasting service that works along with ADS-B to allow aircraft operators to receive aeronautical information such as weather and airspace restrictions through a data link to the cockpit. FIS-B is available at no cost to ADS-B users as part of the FAA's Next Generation Air Transportation System (NextGen).

The system gathers information using ADS-B ground stations and weather radar and delivers that data to an aircraft's onboard cockpit display in the form of weather alerts, airport information and various other reports. FIS-B was created for use by general aviation pilots.

FIS-B data were provided by the FAA⁹. Figure 2 illustrates the composite FIS-B graphical data that was being transmitted by FAA's Surveillance and Broadcast Services (SBS) program at about 1630. The accident airplane's ADS-B flight track is

⁹ FIS-B data from 1600-1700 EST are provided in Attachment 6: FAA FIS-B Data

indicated in magenta and is superimposed over the composite NEXRAD weather (shaded in order of least to greatest intensity in blue, bright green, yellow, orange, red, and magenta).

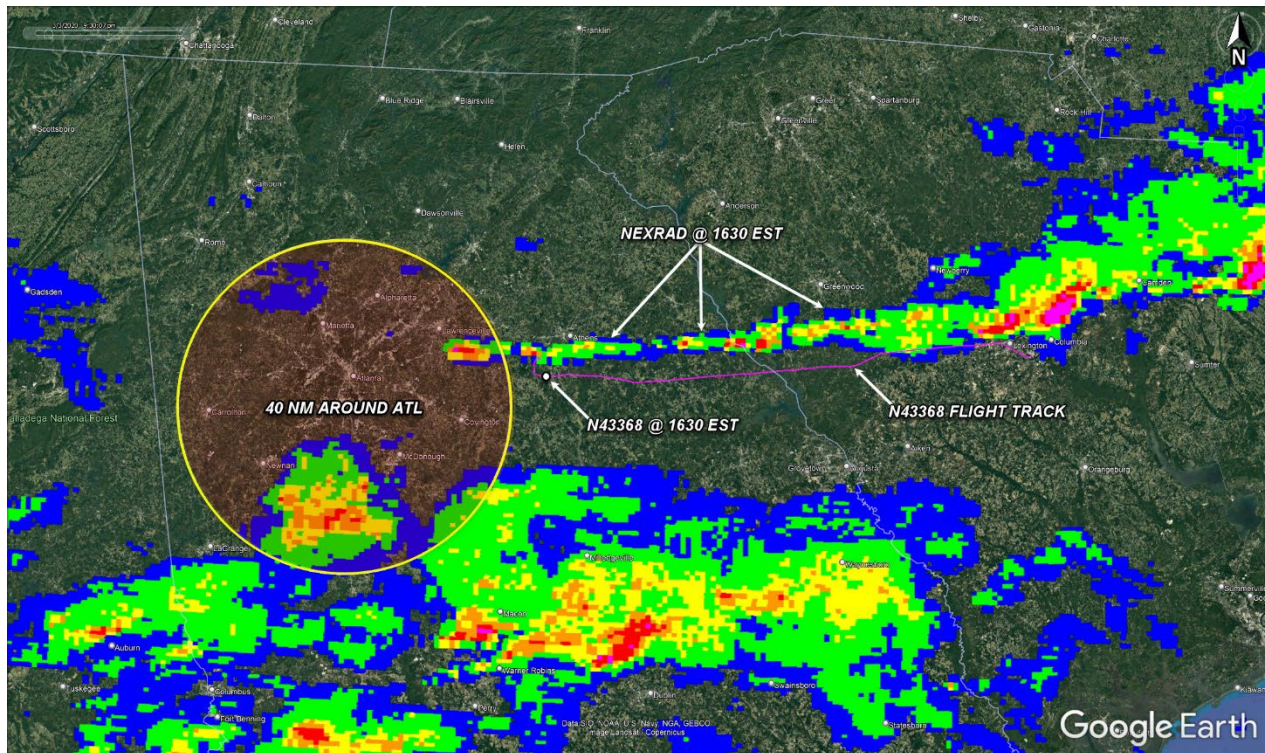


Figure 2. Graphical NEXRAD information transmitted by SBS to FIS-B clients at about 1630, with additional mark-ups showing accident flight track, and 40 mile-diameter circle surrounding ATL.

2.3 Radar STARS Playback

A STARS playback of the services provided to N43368 by A80 TRACON was preserved. Screen captures were taken from this playback at one-minute intervals from 1620 through 1636 and illustrate the precipitation that was being displayed to the controller while providing services to the accident aircraft¹⁰. Figure 3 below shows the side-by-side screen captures taken at 1630 and 1633.

The image on the left shows N43368 (circled in yellow) at 1630 when ATC instructed the pilot to fly heading 300° and the pilot expressed concern that it would take him into thunderstorms.

The image on the right shows N43368 at 1633, when ATC requested the pilot to say flight conditions and the pilot reported "rain." The STARS displayed weather at that time showed the aircraft in an area of level 2 to 3 (moderate precipitation).

¹⁰ Full size images of the STARS screen captures are provided in Attachment 7: STARS Screen Captures.

The inset shows an exemplar image of the STARS weather levels and their corresponding display symbology. NOTE: The colors in the exemplar image are not exactly those shown on the STARS display.

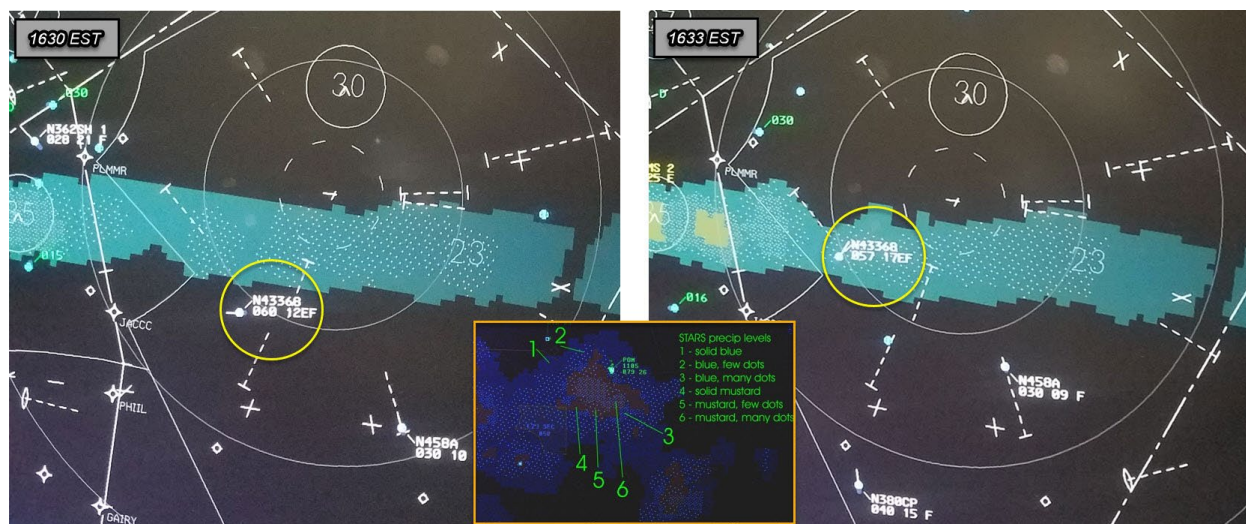


Figure 3. A comparison of ERAM screen captures taken at 1630 (left) and 1633 (right).

3.0 Weather Information

The NTSB Meteorologist participated in the ATC group investigative activities but was not part of the working group. For more detailed weather information regarding any of the information contained in this section, see the Meteorology Factual Report in the public docket.

3.1 Surface Observations

The area surrounding the accident site was documented using official Meteorological Aerodrome Reports (METAR)¹¹ and Specials (SPECI)¹². The following observations were taken from standard code and are provided in plain language. Surface observations from the weather station nearest the accident location are provided below.

Athens-Ben Epps Airport (KAHN) had the closest official weather station to the accident site. KAHN had an Automated Surface Observing System (ASOS)¹³ whose

¹¹ METAR – Aviation Routine Weather Report – The METAR has been adopted by the United States to provide surface observations of current weather conditions in support of aviation for the terminal. It is issued at fixed times hourly.

¹² SPECI – Special Weather Report – An unscheduled report taken when weather conditions that meet specified criteria are observed during the period between regular hourly reports. A SPECI is issued as soon as possible after the relevant criteria is observed.

¹³ ASOS – Automated Surface Observing System – Automated sensor suites equipped with meteorological instruments to observe and report wind, visibility, ceiling, temperature, dewpoint, altimeter, and barometric pressure. These systems generally report at hourly intervals, but also report

reports were supplemented by ATC when the tower was in operation¹⁴. The KAHN ASOS site was located about 10 miles northeast of the accident site, at an elevation of 813 ft, and had a 5° westerly magnetic variation¹⁵. The following observations were taken and disseminated during the time surrounding the accident¹⁶:

[1551 EST] METAR KAHN 032051Z 31012G20KT 4SM -RA SCT025
BKN031 BKN037 20/16 A2981 RMK AO2 RAB48 SLP091
P0000 60000 T02000156 53002=

[1553 EST] SPECI KAHN 032053Z 29010G20KT 1 3/4SM +RA SCT023
BKN029 BKN037 19/15 A2980 RMK AO2 P0001 T01890150=

[1556 EST] SPECI KAHN 032056Z 28007G20KT 1 1/4SM +RA SCT023
BKN032 BKN060 18/15 A2979 RMK AO2 P0011 T01780150=

[1602 EST] SPECI KAHN 032102Z 26004KT 2 1/2SM -RA FEW023 BKN032
BKN060 18/15 A2978 RMK AO2 P0011 T01830150=

**[1606 EST] SPECI KAHN 032106Z 30008KT 10SM BKN025 BKN032
OVC060 18/15 A2979 RMK AO2 RAE05 P0011
T01830150=**

[1634 EST] ACCIDENT TIME

**[1643 EST] SPECI KAHN 032143Z 25004KT 10SM FEW029 SCT120
19/16 A2980 RMK AO2 RAE05B15E25 P0011
T01890156=**

[1651 EST] METAR KAHN 032151Z 00000KT 10SM FEW029 BKN120
19/16 A2980 RMK AO2 RAE05B15E25 SLP090 P0011
01890156=

KAHN weather at 1606 EST, wind from 300° at 8 knots, 10 miles visibility or greater, broken ceiling at 2,500 ft above ground level (agl), broken clouds at 3,200 ft agl, overcast skies at 6,000 ft agl, temperature of 18°Celsius (C), dew point temperature of 15°C, and an altimeter setting of 29.79 inches of mercury. Remarks: automated station with a precipitation discriminator, rain ended at 1605 EST, 0.11 inches of precipitation since 1553 EST, temperature 18.3°C, dew point temperature 15.0°C.

special observations if weather conditions change rapidly and cross aviation operation thresholds.

¹⁴ The operating hours of the AHN control tower were from 0800 to 2000 local time.

¹⁵ Magnetic variation - The angle (at a particular location) between magnetic north and true north. Latest measurement taken from <https://skyvector.com/>

¹⁶ The bold sections in this NWS product and the rest of the products in this report are intended to highlight the sections that directly reference the weather conditions that affected the accident location around the accident time. The local times in this section next to the METARs are provided for quick reference between UTC and local times around the accident time.

KAHN weather at 1643 EST, wind from 250° at 4 knots, 10 miles visibility or greater, few clouds at 2,900 ft agl, scattered clouds at 12,000 ft agl, temperature of 19°C, dew point temperature of 16°C, and an altimeter setting of 29.80 inches of mercury. Remarks: automated station with a precipitation discriminator, rain ended at 1605 EST, rain began at 1615 EST, rain ended at 1625 EST, 0.11 inches of precipitation since 1553 EST, temperature 18.9°C, dew point temperature 15.6°C.

The observations from KAHN prior to the 1606 EST observation indicated IFR conditions, due to visibility with heavy rain as the line of rain showers moved across KAHN, but at the time of the accident the weather reported at KAHN was VFR with the line of rain showers south of the airport.

3.2 Inflight Weather Advisories

3.2.1 Significant Meteorological Information

Significant Meteorological Information (SIGMET¹⁷) 66E was valid for the accident site at the accident time. SIGMET 66E was issued at 1555 EST and was valid through 1755 EST and warned of an area of thunderstorms with the forecast box moving from 250° at 50 knots with thunderstorm tops to FL280¹⁸.

3.2.2 Airmen's Meteorological Information

Airmen's Meteorological Information (AIRMET)¹⁹ Sierra, Tango and Zulu were valid for the accident site at the accident time. The AIRMETs warned of mountain obscuration by clouds, precipitation, and mist, moderate turbulence below 16,000 ft, and moderate icing between the freezing level²⁰ and FL220.

3.3 Pilot Weather Report Information

A review of Pilot Weather Report (PIREP)²¹ information that had been disseminated into the National Airspace System (NAS) revealed the following PIREPs

¹⁷ SIGMET - Significant Meteorological Information - A weather advisory issued concerning weather significant to the safety of all aircraft. SIGMET advisories cover severe and extreme turbulence, severe icing, and widespread dust or sandstorms that reduce visibility to less than 3 miles.

¹⁸ Flight Level - A Flight Level (FL) is a standard nominal altitude of an aircraft, in hundreds of ft. This altitude is calculated from the International standard pressure datum of 1013.25 hPa (29.92 inHg), the standard sea-level pressure, and therefore is not necessarily the same as the aircraft's true altitude either above mean sea level or above ground level.

¹⁹ AIRMET - Airmen's Meteorological Information - In-flight weather advisories issued only to amend the area forecast concerning weather phenomena which are of operational interest to all aircraft and potentially hazardous to aircraft having limited capability because of lack of equipment, instrumentation, or pilot qualifications.

²⁰ Freezing level between 6,000 and 13,000 ft msl.

²¹ PIREP - Pilot Weather Report - A report made by a pilot of meteorological phenomena encountered by an aircraft in flight.

were from one hour before the accident time until one hour after the accident time and within 75 miles of the accident location. A review of ATC audio indicated several additional PIREPs received by A80 TRACON over the same time period, but these additional PIREPs were never disseminated into the NAS.

ATL UA /OV ATL135050/TM 2023/FL120/TP B757/TA 27/TB LIGHT CHOP
ATL UA /OV ATL315030/TM 2105/FL130/TP MD88/WV 27003
GYH UA /OV KGYH050004/TM 2124/FL017/TP FA90/SK BKN008-TOP021/WX
10/TA 17/WV 22006
GSP UA /OV GRD135010/TM 2132/FL080/TP SR22/TB MOD
CAE UA /OV 8 S CHATT/TM 2133/FL080/TP SR22/TB MOD TURB
MCN UA /OV MCN/TM 2140/FLDURGD/TP E135/TA 09/IC LGT RIME 110-130
ATL UA /OV ATL045020/TM 2143/FLDURGD/TP CRJ7/TB MOD
SPA UA /OV SPA/TM 2149/FL160/TP E145/TB CONS LGT CHOP/RM ZTLFD
SPA UA /OV SPA/TM 2154/FL150/TP A319/TB CONS LGT OCNL MOD 150-
180/RM ZTLFD
ATL UA /OV ATL/TM 2202/FLDURGC/TP B737/SK BASE SCT035
WRB UA /OV MCN320035/TM 2226/FL280/TP B350/TB NEG/RM SMOOTH
RIDE ZTLFD
MCN UA /OV MCN/TM 2229/FLDURGD/TP B737/SK BKN060
ATL UUA /OV VPC/TM 2233/FLDURGD/TP BE36/TB MOD-SEV TB/RM NEG INJ
OR DAMAGE

4.0 ATC Personnel

Interviews were conducted with the following ATC personnel from A80 TRACON who provided services to or in support of N43368 during the accident flight. Facility personnel, training, and qualification records were reviewed and general background information on the controllers interviewed is provided below.

4.1 Athens Radar Controller

The RA controller was providing services to N43368 at the time of the accident, not combined with any other positions and did not have an associate radar "D Side" controller assisting him. This configuration was normal for that time of day and tempo of operations. He was 44 years old and began his ATC career in May 2002 when he was hired by the FAA and attended initial training at the FAA Academy in Oklahoma City, OK. After initial training he was assigned to Southwest Florida International

Airport Traffic Control Tower (RSW ATCT) until May 2006 when he transferred to A80 TRACON.

He had been certified on RA since June 2006 and was current and proficient on the positions he was working on the day of the accident in accordance with facility standards. He was working his normally scheduled shift and recalled nothing remarkable about the 72 hours leading up to the time of the accident consisting of normal daily routine, with adequate sleep and meals. According to CRU-ART²² his working hours for the week leading up to and including the day of the accident were:

Wednesday	1045-1845
Thursday	0630-1430
Friday	0600-1600
Saturday	Off
Sunday	Off
Monday	1515-2315
Tuesday	1345-2145

He possessed a current ATC medical clearance that was issued on January 14, 2020. He had no waivers or restrictions to his medical clearance. He was prescribed medications for conditions documented in his medical records, and was taking them as prescribed, but could not recall if he had taken them on the day of the accident. Post-accident toxicology screening was not performed.

4.2 Satellite Controller In-Charge

The SS CIC controller was providing general supervision in the area where the RA controller was working at the time of the accident. The position was not combined with any other control position. This configuration was normal for that time of day and tempo of operations. He was 50 years old and began his ATC career in Mar 1992 when he was hired by the FAA and attended initial training at the FAA Academy in Oklahoma City, OK. After initial training he was assigned to Flight Services in Northway, AK, working for just over one year then transferring to Bethel (BET) ATCT. He left BET ATCT in August 1996 and spent several months at Macon (MCN) ATCT before transferring to Minneapolis (M98) TRACON. After almost five years at M98 TRACON he accepted a transfer to A80 TRACON and had remained there since.

He had been certified as SS CIC since November 2002 and was current and proficient on the position he was working on the day of the accident in accordance with facility standards. He was working his normally scheduled shift and recalled nothing remarkable about the 72 hours leading up to the time of the accident consisting of normal daily routine, with adequate sleep and meals. According to CRU-

²² CRU-ART - The ATO Resource Tool ("CRU-ART") is the official time and attendance system used by air traffic facilities for recording the time used by bargaining unit employees (i.e., air traffic controllers).

ART his working hours for the week leading up to and including the day of the accident were:

Wednesday	1300-2100	
Thursday	1046-1646	
Friday	Off	
Saturday	Off	
Sunday	Off	(Scheduled leave)
Monday	1345-2145	
Tuesday	1300-2100	

He possessed a current ATC medical clearance that was issued on March 3, 2020. He had requirement to wear corrective lenses while performing ATC duties and stated that he was wearing them at the time of the accident. He had no other waivers or restrictions to his medical clearance and reported taking no medications on the day of the accident. Post-accident toxicology screening was not performed.

5.0 Air Traffic Control Procedures

FAA Order JO 7110.65X, Air Traffic Control, outlined procedures solicitation and dissemination of PIREP information. FAA Order JO 7110.65X, Chapter 2, Section 6 stated in part:

2-6-2. PIREP SOLICITATION AND DISSEMINATION

Emphasis must be placed on the solicitation and dissemination of PIREPs. Timely dissemination of PIREPs alerts pilots to weather conditions and provides information useful to forecasters in the development of aviation forecasts. PIREPs also provide information required by ATC in the provision of safe and efficient use of airspace. This includes reports of strong frontal activity, squall lines, thunderstorms, light to severe icing, wind shear and turbulence (including clear air turbulence) of moderate or greater intensity, braking action, volcanic eruptions and volcanic ash clouds, detection of sulfur gases in the cabin, and other conditions pertinent to flight safety. Null reports are critical to aviation weather forecasters and pilots and must be disseminated. Controllers must provide the information in sufficient detail to assist pilots in making decisions pertinent to flight safety.

a. Solicit PIREPs when requested, deemed necessary or any of the following conditions exists or is forecast for your area of jurisdiction:

1. Ceilings at or below 5,000 feet. These PIREPs must include cloud bases, tops, and sky conditions when available. Additionally, when providing approach control services, ensure that at least one descent/climb out PIREP is obtained each hour.
2. Visibility (surface or aloft) at or less than 5 miles.

3. Thunderstorms and related phenomena.

2-6-4. ISSUING WEATHER AND CHAFF AREAS

a. Controllers must issue pertinent information on observed/reported weather and chaff areas to potentially affected aircraft. Define the area of coverage in terms of:

1. Azimuth (by referring to the 12-hour clock) and distance from the aircraft and/or
2. The general width of the area and the area of coverage in terms of fixes or distance and direction from fixes.

c. Use the term "precipitation" when describing radar-derived weather. Issue the precipitation intensity from the lowest descriptor (LIGHT) to the highest descriptor (EXTREME) when that information is available. Do not use the word "turbulence" in describing radar-derived weather.

1. LIGHT.
2. MODERATE.
3. HEAVY.
4. EXTREME.

h. When requested by the pilot, provide radar navigational guidance and/or approve deviations around weather or chaff areas. In areas of significant weather, plan ahead and be prepared to suggest, upon pilot request, the use of alternative routes/altitudes.

3. If a pilot enters your area of jurisdiction already deviating for weather, advise the pilot of any additional weather which may affect the route.

F. LIST OF ATTACHMENTS

Attachment 1: Controller Interview Summaries
Attachment 2: FAA Aircraft Accident Package
Attachment 3: ATC Audio Partial Transcript
Attachment 4: FAA Radar Data
Attachment 5: FAA ADS-B Data
Attachment 6: FAA FIS-B Data
Attachment 7: STARS Screen Captures

Submitted by:

Brian Soper
Senior Air Traffic Control Investigator