NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

March 5, 2022

Group Chairman's Factual Report

AIR TRAFFIC CONTROL

ERA19FA188

A. ACCIDENT

Location: Castalia, North Carolina
Date: June 7, 2019
Time: 1333 eastern daylight time (EDT)[1]
1733 coordinated universal time (UTC)
Airplane: PA 46-350P, N709CH

B. AIR TRAFFIC CONTROL GROUP

Group Chairman — Brian Soper
National Transportation Safety Board (NTSB)
Washington, DC

Group Member — Brent Eberhart
Federal Aviation Administration (FAA)
Fort Worth, TX

Group Member — Karena Marinas
National Air Traffic Controllers Association (NATCA)
Los Angeles, CA

C. SUMMARY

On June 7, 2019, about 1333 eastern daylight time, a Piper PA 46-350P, N709CH, broke up in flight following an encounter with weather near Castalia, North Carolina. The private pilot, a pilot-rated passenger, and two other passengers were fatally injured. The airplane was destroyed. The airplane was registered to the pilot and was operated under the provisions of 14 *Code of Federal Regulations* part 91 as a personal flight. Day, instrument meteorological conditions prevailed in the area, and an instrument flight rules flight plan was filed for the flight. The flight originated at Naples, Florida (APF) and was destined for Easton Airport (ESN), Easton, Maryland.

D. DETAILS OF THE INVESTIGATION

The air traffic control (ATC) group was formed on June 8, 2019, after preliminary information indicated concern with the ATC services provided to the accident flight. The group consisted of the chairman 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 operational factors[2].

[1] All times are in eastern daylight time (EDT) unless otherwise noted.
[2] An NTSB Senior Meteorologist joined the ATC group remotely 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 June 12, the group met at the Washington Air Route Traffic Control Center (ZDC ARTCC) 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), office of general counsel, and air traffic district office. 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, traffic management unit (TMU), center weather service unit (CWSU), and area where air traffic controllers receive their required pre-duty weather briefing (PDWB). The group reviewed SATORI[3] and ERAM[4] replays of the event and conducted interviews with the CWSU meteorologist that was working at the time of the accident, the meteorologist in-charge (MIC) of the CWSU, and the Tar River sector radar (R38) controller[5].

On June 13, the group reviewed additional ATC data, conducted interviews with the Tar River sector radar associate (D38) controller and controller in-charge (CIC) that were working at the time of the accident. After completing on-site investigative activities at ZDC ARTCC, the group returned to the hotel to complete work on the field notes.

On June 14, the group met at the hotel and completed field notes, obtained concurrence, and concluded the field phase of the 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 Package[6],

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[3] SATORI – Systematic Air Traffic Operations Research Initiative - A software system utilized for the re-creation of air traffic control operational incidents in a format much like the one displayed to the air traffic control specialist. It is used in en route facilities to review training management issues, investigate accidents and operational errors, develop facility specific specialty training programs, and present facility-wide briefings on operational incidents.

[4] ERAM – En Route Automation Modernization - The Next Gen system designed to replace the En Route Host and backup system previously utilized at Air Route Traffic Control Centers and allows for faster processing of route requests and in-flight route changes.

[5] Transcripts of the recorded interviews conducted with CWSU personnel are included in the Meteorology Factual Report. Interview summaries of the controllers interviewed are included in Attachment 1: Controller Interview Summaries.

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

certified audio re-recordings and radar data. All times are rounded to the nearest minute and altitudes are in feet 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 N709CH departed APF until the time of the accident.

1053 N709CH departed APF and was issued a climb to 10,000 feet by the Southwest Florida International Airport Traffic Control Tower (RSW ATCT). Shortly after, RSW ATCT transferred control of N709CH to Miami (ZMA) ARTCC.

1058 The pilot of N709CH first checked in with ZMA ARTCC leaving 7,700 feet for 10,000 feet.

1059 The ZMA ARTCC Fort Myers low sector radar (R24) controller instructed the pilot of N709CH to climb and maintain FL 240[7]. The pilot acknowledged then requested and was approved to deviate 10 degrees left for weather.

1100 The pilot of N709CH requested and was approved to deviate 30 degrees right for weather.

1104 The R24 controller broadcast convective SIGMETs[8] 49E and 50E on frequency.

1107 The R24 controller instructed N709CH to climb and maintain FL 230. The pilot acknowledged.

1113 The R24 controller transferred control of N709CH to the ZMA ARTCC Boyle sector radar (R25) controller.

The pilot of N709CH checked in with the R25 controller leaving FL 210 for FL 230 and was advised he could expect higher shortly.

1124 The R25 controller instructed N709CH to climb and maintain FL 270. The pilot acknowledged with a correct readback.

1133 The R25 controller transferred control of N709CH to Jacksonville (ZJX) ARTCC.

1134 The pilot of N709CH checked in with the ZJX ARTCC Green Cove sector

[7] 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. FLs are used to describe altitudes beginning at 18,000 feet msl (FL 180).

[8] SIGMET – Significant Meteorological Information - A weather advisory issued concerning weather significant to the safety of all aircraft. SIGMET advisories cover severe and extreme turbulence, thunderstorms, severe icing, and widespread dust or sandstorms that reduce visibility to less than 3 miles. See the Meteorology Factual Report for detailed information on the SIGMETs related to this accident.

radar (R75) controller, level at FL 270. The controller acknowledged.

1156 The R75 controller broadcast convective SIGMETs 49E, 50E and 51E valid until 1255 and convective SIGMETs 54E, 55E, 56E and 58E valid until 1355.

1204 The R75 controller transferred control of N709CH to the ZJX ARTCC States sector radar (R68) controller.

1205 The pilot of N709CH checked in with the R68 controller level at FL 270. The controller acknowledged.

1220 The R68 controller advised the pilot of N709CH of moderate and heavy to extreme precipitation at his one o'clock in 4-5 miles and 40 miles in diameter. The pilot acknowledged.

1231 The R68 controller transferred control of N709CH to the ZJX ARTCC Summer sector radar (R47) controller. The pilot of N709CH checked in with the ZJX ARTCC R47 controller level at FL 270. The controller acknowledged.

1300 The R47 controller transferred control of N709CH to the Washington (ZDC) ARTCC Tar River sector radar (R38) controller.

1301 The pilot of N709CH contacted the R38 controller, level at FL 270; the R38 controller acknowledged and advised she would have a new routing for him in a minute.

1304 The R38 controller provided re-routing to the pilot of N709CH, clearing him to Richmond (RIC), V16, Patuxent (PXT), V93, GRACO then direct. The pilot acknowledged with an incorrect readback of V616 instead of V16, which was not corrected by the controller.

1305 The R38 controller broadcast that ZDC Center Weather Advisory (CWA)[9] was available on HIWAS[10] and via flight service.

1317 The pilot of N709CH advised the R38 controller that his radar[11] showed weather coming ahead on his route and asked if the controller had seen it. The controller responded advising that some had been going around it and some had been going through it, but that he could deviate right of course and when able to proceed direct RIC. The pilot acknowledged with a correct readback.

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[9] CWA – Center Weather Advisory - An aviation weather warning for conditions meeting or approaching national in-flight advisory (AIRMET, SIGMET or convective SIGMET) criteria. The CWA is primarily used by air crews to anticipate and avoid adverse weather conditions in the en route and terminal environments.

[10] HIWAS – Hazardous Inflight Weather Advisory Service - Continuous recorded hazardous inflight weather advisories broadcasted to airborne pilots over selected VOR outlets.

[11] The accident airplane was equipped with a factory airborne weather radar system and also had a subscription to XM satellite weather and may have had FIS-B information available to him as well. It is unknown which information the pilot may have been referring to.

1320 The R38 controller advised the pilot of N709CH that they could deviate left or right around the weather, whichever was better for him until able to proceed direct RIC. The pilot responded saying RIC looked like "dicey" weather too, and asked the controller "is that okay for us?" The R38 controller said that she did not know – she did not work that sector and advised it looked "a little rough" and that the following sector would be able to provide something for him.

1321 The pilot of N709CH advised they felt it might be better to go east toward the coast to get around all the weather. The R38 replied that there was an active restricted area in that direction, but asked if a routing of Franklin (FKN), direct Harcum (HCM), direct TAPPA, direct PXT
Would work. The pilot advised he would have to check.

1324 The pilot of N709CH advised the R38 controller that he would like to start heading toward FKN. The controller cleared N709CH direct FKN, direct HCM, direct TAPPA, direct PXT and the rest of the route unchanged. The pilot did not respond.

1329 The pilot of N709CH advised the R38 controller that it looked like he was about to go into some rain and asked if she had any tops information. The controller advised she had no tops reports but had some weather deviations and advised he could go further right if needed. The pilot requested to deviate 30 degrees right.

1330 The controller approved the deviation and instructed the pilot to proceed direct FKN when able. The pilot acknowledged with a correct readback.

There were no further transmissions received from N709CH.

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, N709CH was transmitting on discrete beacon code 1436 from shortly after departing APF 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 mid-Atlantic region of the accident[12]. The data was of good quality and was used in producing figure 1. Figure 1 illustrates the final segment of the accident flight track, as well as primary only radar returns (potential falling debris) in the vicinity of, and coincident with, the time of the in-flight break-up.

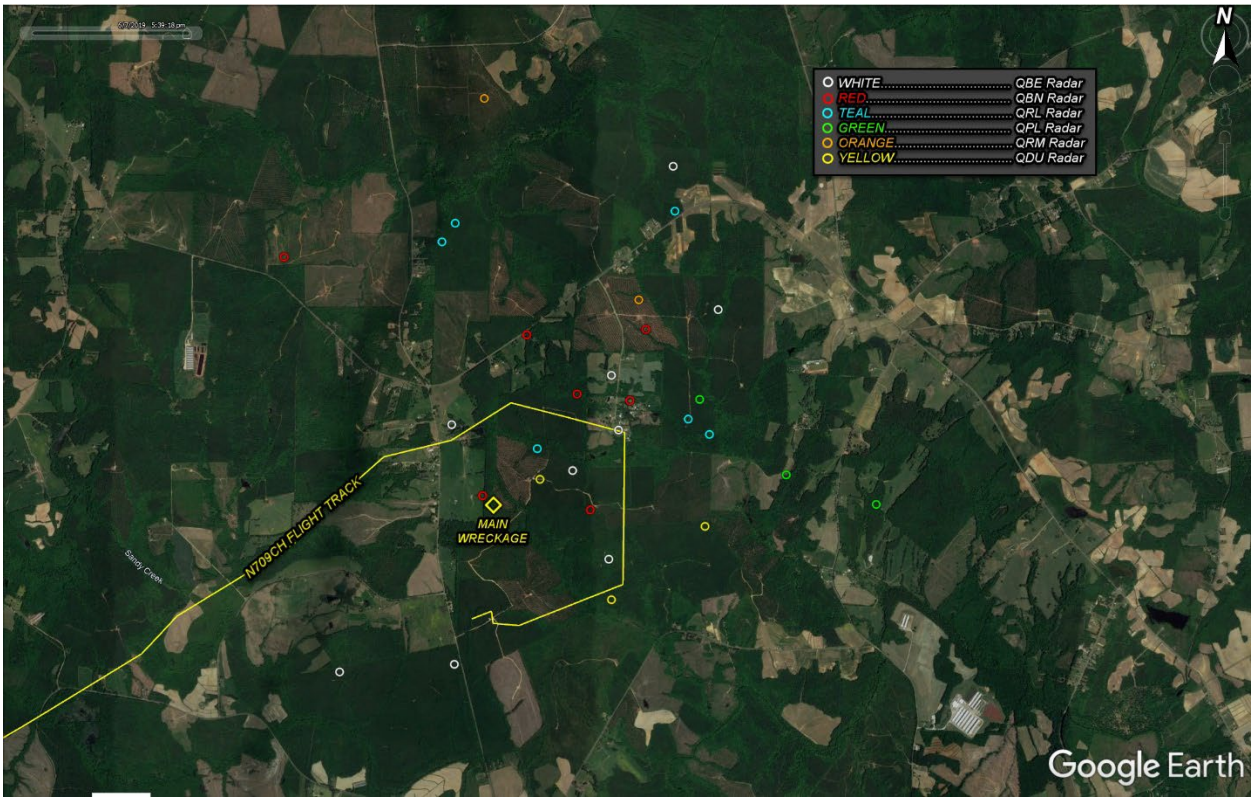

Figure 1. Final segment of accident flight with primary only returns illustrated - Radar Data.

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

[12] Radar data for the final portion of the accident flight is provided in Attachment 3: FAA Radar Data.

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 was provided by the FAA[13]. Figure 2 below illustrates the entire accident flight track with first/last ADS-B information indicated, as well as airport of departure and area of in-flight break-up. Altitudes are in feet above msl encoded in 25 feet increments and may vary from those altitudes seen in radar data.

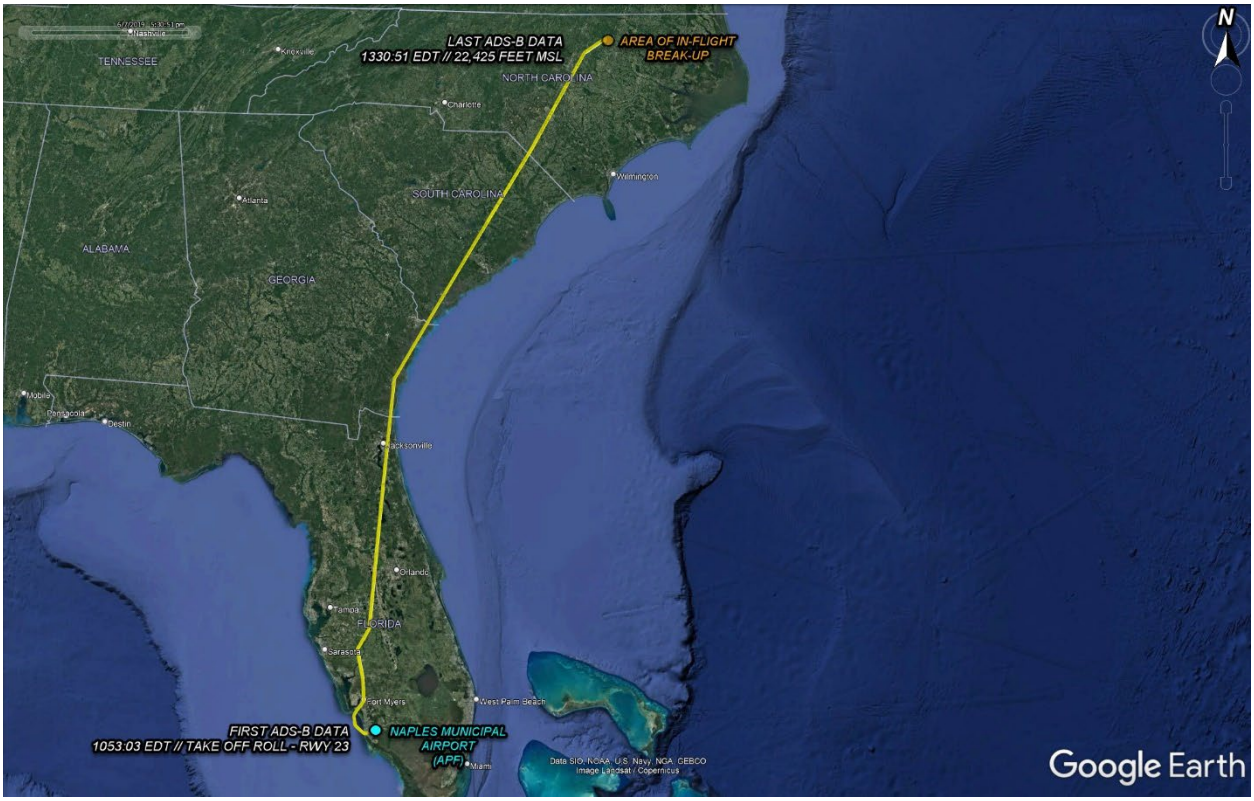

Figure 2. Overview of accident flight track - ADS-B Data.

2.2.1 Flight Information System – Broadcast

The airplane was equipped with factory airborne weather radar, however that equipment had no memory or historical information that might indicate what the pilot may have seen in the cockpit. However, the airplane 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

[13] ADS-B data for the entire accident flight is provided in Attachment 4: FAA ADS-B Data.

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 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.

Though the system lacks sufficient resolution and updating capability necessary for tactical aerial maneuvering around localized weather phenomena, and the ceiling for FIS-B is FL240, it is expected that users can receive FIS-B service above that altitude. Some FIS-B products will only include data up to or near FL240, however winds and temperatures aloft will extend up to as high as FL390.

Figure 3 illustrates the composite FIS-B graphical data that was being transmitted by FAA's Surveillance and Broadcast Services (SBS) program at about 1330. The accident airplane's ADS-B flight track is indicated in olive green 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).

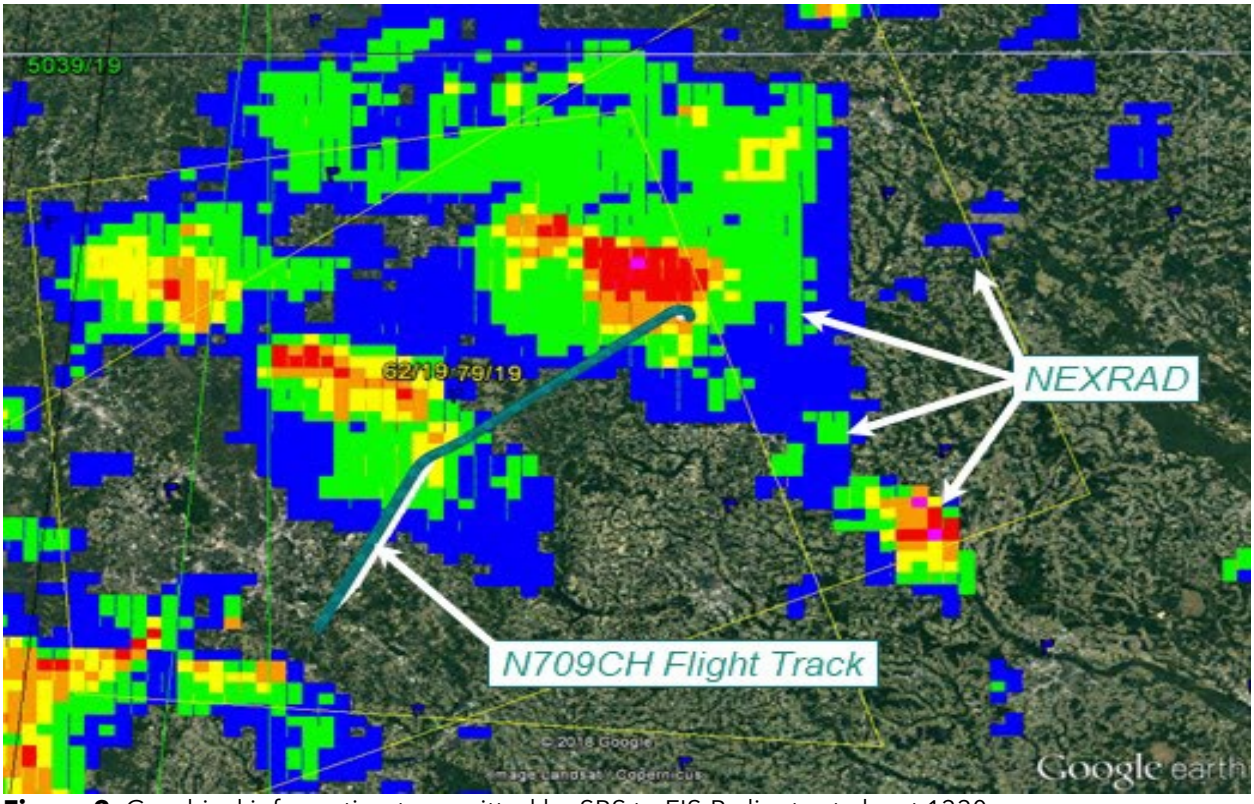

Figure 3. Graphical information transmitted by SBS to FIS-B clients at about 1330.

2.3 Radar ERAM Playback

An ERAM playback of the services provided to N709CH by ZDC ARTCC was preserved. Screen captures were taken from this playback at one-minute intervals from 1315 through 1334 and illustrate the precipitation that was being displayed to the controller while providing services to the accident aircraft[14]. Figure 4 below shows the side-by-side screen captures taken at 1324 and 1331.

The image on the left shows N709CH (circled in red) at 1324 when the pilot accepted the ATC offered routing of direct FNK. The dashed green line was the flight track being flown (direct RIC), and the dashed yellow line was the flight track accepted (direct FNK).

The image on the right shows N709CH at 1331, just after loss of radio communications and in an area of level 2 to 3 (heavy to extreme) precipitation.

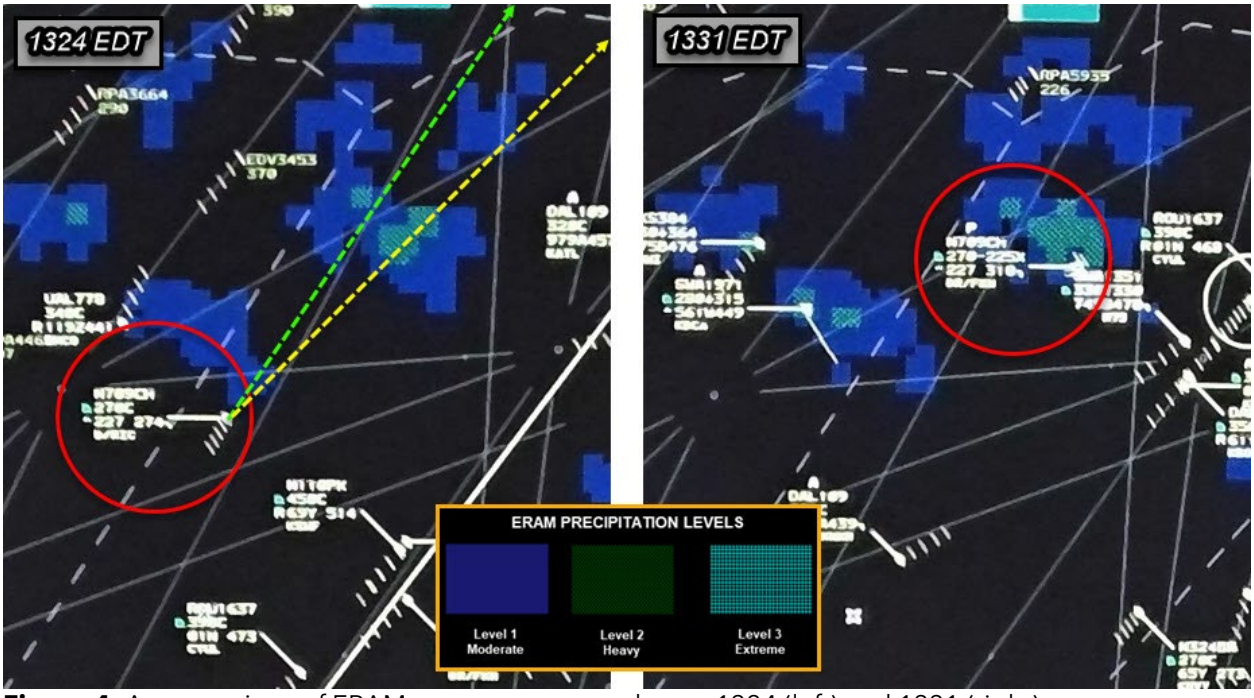

Figure 4. A comparison of ERAM screen captures taken at 1324 (left) and 1331 (right).

3.0 Weather Information

The Meteorology Group Chairman participated in the ATC group investigative activities to the extent permitted via TELCON. For more detailed weather information see the Meteorology Factual Report in the public docket.

[14] Full size images of the ERAM screen captures are provided in Attachment 5: ERAM Screen Captures.

3.1 Surface Observations

The area surrounding the accident site was documented using official Meteorological Aerodrome Reports (METAR)[15] and Specials (SPECI)[16]. 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.

An Automated Weather Observing System (AWOS)[17] whose reports were not supplemented was located at Triangle North Executive Airport (LHZ) in Louisburg, North Carolina which was located about 18 miles west-southwest of the accident location at an elevation of 368 feet and had a 9° westerly magnetic variation[18]. Reports from the LHZ AWOS during the times surrounding the accident flight are presented here.

[1240 EDT]	METAR KLHZ 071640Z AUTO 00000KT 4SM +RA SCT006 OVC022 22/21 A2990 RMK AO2 P0003=
[1300 EDT]	METAR KLHZ 071700Z AUTO 00000KT 7SM SCT009 SCT015 OVC022 22/21 A2990 RMK AO2=
[1320 EDT]	METAR KLHZ 071720Z AUTO 04003KT 7SM SCT012 BKN047 OVC065 22/21 A2988 RMK AO2=
[1340 EDT]	METAR KLHZ 071740Z AUTO 00000KT 3SM RA SCT004 BKN047 OVC065 22/21 A2988 RMK AO2 P0003=

KLHZ weather at 1320 EDT, automated, wind from 040° at 3 knots, 7 miles visibility, scattered clouds at 1,200 ft above ground level (agl), broken ceiling at 4,700 ft agl, overcast skies at 6,500 ft agl, temperature of 22°Celsius (C), dew point temperature of 21°C, and an altimeter setting of 29.88 inches of mercury. Remarks: automated station with a precipitation discriminator.

KLHZ weather at 1340 EDT, automated, wind calm, 3 miles visibility, moderate rain, scattered clouds at 400 ft agl, broken ceiling at 4,700 ft agl, overcast skies at 6,500 ft agl, temperature of 22°C, dew point temperature of 21° C, and an altimeter

[15] 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.
[16] SPECI – Special Weather Report – An unscheduled report taken when weather conditions meeting 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.
[17] AWOS – Automated Weather Observing System is equipped with meteorological instruments to observe and report temperature, dewpoint, wind speed and direction, visibility, cloud coverage and ceiling up to 12,000 feet, and altimeter setting.
[18] Magnetic variation – The angle (at a particular location) between magnetic north and true north.

setting of 29.88 inches of mercury. Remarks: automated station with a precipitation discriminator, 0.03 inches of precipitation since 1300 EDT.

3.2 Inflight Weather Advisories

3.2.1 Significant Meteorological Information

SIGMET[19] 65E was valid for the accident site at the accident time. SIGMET 65E warned of an area of embedded thunderstorms with tops to FL410 between 1255 and 1455. The convective SIGMET box was forecast to move from 230° at 10 knots.

3.2.2 Center Weather Advisory

Center Weather Advisory (CWA)[20] 201 at 1232 (with a correction sent at 1235) was valid until 1300 for the accident area. The advisory warned of a developing area of thunderstorms moving northeast at 10 knots with tops around FL400. Impacts to J55, J121, and J174 routes with additional development likely through 1300.

3.2.3 Airmen's Meteorological Information

Airmen's Meteorological Information (AIRMET)[21] Tango and Zulu were valid for the accident site at the accident time. The AIRMETs warned of moderate turbulence between FL210 and FL420 and moderate icing between 15,000 feet and FL250.

3.3 Pilot Weather Report Information

A review of Pilot Weather Report (PIREP)[22] information that had been disseminated into the National Airspace System (NAS) revealed the following PIREPs were from around the accident time and within 100 miles of the accident location.

RIC UA /OV FINAL RWY34/TM 1630/FL005/TP EC45/SK SCT005/RM RWY IN SIGHT 005

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[19] 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.
[20] CWA – Center Weather Advisory - An aviation weather warning for conditions meeting or approaching national in-flight advisory (AIRMET, SIGMET or SIGMET for convection) criteria. The CWA is primarily used by air crews to anticipate and avoid adverse weather conditions in the en route and terminal environments.
[21] 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.
[22] PIREP – Pilot Weather Report – A report made by a pilot of meteorological phenomena encountered by an aircraft in flight.

ILM UA /OV ILM340030/TM 1634/FL370/TP B738/TB MOD CAT

RIC UA /OV 3NM FINAL RWY34/TM 1644/FL012/TP A319/SK SCT002/WX +RA/TB +10KTS 012

GSO UA /OV GSO050006/TM 1653/FL030/TP CRJ2/SK BKN013/WX RA/RM DURD FINAL RWY 23R

DPL UA /OV ILM360030/TM 1700/FL045/TP PA32/SK FEW035/OVC070

ETC UA /OV TYI/TM 1710/FL330/TP A319/TB MOD 330

RDU UA /OV RDU180020/TM 1711/FL330/TP A320/TB MOD 330

ARP UAL2206 3731N 07749W 1715 F370 TB LGT-MOD

RIC UA /OV RIC/TM 1715/FL020/TP E135/SK BASES OVC003/TB LGT-MOD/RM LIGHTING 1 NM FINAL R34 CLOUD TO GROUN

GSO UA /OV GSO05008/TM 1717/FLDURD/TP MD88/SK BKN017-TOPUNKN/WX 5SM/RM DURD FINAL RWY 23R

RIC UA /OV HPW/TM 1727/FL290/TP A321/TB MOD 290/RM PILOT SAID STAY AWAY

RIC UA /OV RIC/TM 1802/FL020/TP CRJ2/SK BASES OVC003

RIC UA /OV RWY 2 FINAL/TM 1802/FL004/TP E175/SK SCT009/WX -RA BR/RM FIELD IN SIGHT AT MINS

RDU UA /OV RDU230015/TM 1805/FLDURGD/TP A320/WX HEAVY RAIN/TB SMOOTH

GSO UA /OV GSO050002/TM 1805/FLDURGD/TP A319/SK BKN006/WX RA/TB SMOOTH

RDU UA /OV RDU010008/TM 1825/FLDURGD/TP E170/SK BASES OVC050/TB LGT-MOD

4.0 ATC Personnel

Interviews were conducted with the following ATC personnel from ZDC ARTCC who provided services to or in support of N709CH 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 Sector 38 Radar Controller

The R38 controller was providing services to N709CH at the time of the accident, not combined with any other positions and had an associate radar "D Side" controller assisting her. This configuration was normal for that time of day and tempo of operations. She was 36 years old and began her ATC career in May 2007 when she was hired by the FAA and attended initial training at the FAA Academy in Oklahoma

City, OK. After initial training she was assigned to New York ARTCC (ZNY) until June 2013 when she transferred to ZDC ARTCC.

She had been certified on R38 since February 2014 and was current and proficient on the positions she was working on the day of the accident in accordance with facility standards. She was working her 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-ART[23] her working hours for the week leading up to and including the day of the accident were:

Saturday	0600-1300	
Sunday	Off	(Scheduled leave)
Monday	Off	
Tuesday	Off	
Wednesday	1430-2330	
Thursday	1230-2030	
Friday	0630-2000	(Held over 5.5 hours post-accident)

She possessed a current ATC medical clearance that was issued on March 18, 2018. She had no waivers or restrictions to her medical clearance. Post-accident toxicology screening was not performed.

4.2 Sector 38 Radar Associate Controller

The D38 controller was assisting the R38 controller as the assigned radar associate "D-side" controller at the time of the accident. This configuration was normal for that time of day and tempo of operations. He was 27 years old and began his ATC career in May 2017 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 ZDC ARTCC in September 2017.

He had been certified on D38 since October 2018 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-ART his working hours for the week leading up to and including the day of the accident were:

Saturday	Off
Sunday	Off

[23] 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).

Monday	1430-2230	
Tuesday	Off	(Scheduled leave)
Wednesday	0725-1525	
Thursday	0626-1426	
Friday	0623-2000	(Held over 5.5 hours post-accident)

He possessed a current ATC medical clearance that was issued on November 14, 2018. He had no waivers or restrictions to his medical clearance. Post-accident toxicology screening was not performed.

4.3 Controller In-Charge

The CIC was working as a standalone CIC and not combined with any control positions at the time of the accident. This configuration was normal for that time of day and tempo of operations. He was 34 years old and began his ATC career in July 2008 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 ZDC ARTCC in September 2008.

He had been certified as CIC since June 2015 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-ART his working hours for the week leading up to and including the day of the accident were:

Saturday	Off	(Scheduled leave)
Sunday	Off	
Monday	Off	
Tuesday	1607-0007	
Wednesday	1130-1930	
Thursday	0900-1700	
Friday	0700-2000	(Held over 5 hours post-accident)

He possessed a current ATC medical clearance that was issued on August 8, 2017. He had no waivers or restrictions to his medical clearance. Post-accident toxicology screening was not performed.

5.0 Air Traffic Control Procedures

FAA Order JO 7110.65Y, 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: Aircraft Accident Package
Attachment 3: FAA Radar Data
Attachment 4: FAA ADS-B Data
Attachment 5: ERAM Screen Captures

Submitted by:

Brian Soper
Senior Air Traffic Control Investigator