

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



ERA21LA101

AIR TRAFFIC CONTROL

Group Chair's Factual Report

April 22, 2023

TABLE OF CONTENTS

A. ACCIDENT	3
B. AIR TRAFFIC CONTROL GROUP	3
C. SUMMARY	3
D. DETAILS OF THE INVESTIGATION	4
E. FACTUAL INFORMATION	4
1.0 HISTORY OF FLIGHT	4
2.0 RADAR AND SURVEILLANCE DATA	9
3.0 METEOROLOGICAL INFORMATION	10
3.1 Surface Observations	10
3.2 Pilot Reports	11
3.3 Center Weather Advisories	12
3.4 AIRMETs	13
3.5 Terminal Aerodrome Forecast	13
3.6 Pilot Weather Briefing	14
4.0 CUB RNAV (GPS) RUNWAY 13 APPROACH	14
5.0 AIR TRAFFIC CONTROL PERSONNEL	15
5.1 Watch Supervisor in Charge	15
5.2 Air Traffic Manager	16
5.3 Radar Controller	16
6.0 AIR TRAFFIC CONTROL PROCEDURES	16
6.1 National Orders	16
6.1.1 FAA Order JO 7110.65Y, Air Traffic Control	16
6.1.2 FAA Order JO 7210.3(BB), Facility Operation and Administration	19
6.2 Local Orders	22
6.2.1 CAE ATCT Order 7110.65F, Air Traffic Control Procedures	22
6.2.2 CAE ATCT Order 7210.3E, Facility Management	23
F. LIST OF ATTACHMENTS	24

A. ACCIDENT

Location: Columbia, South Carolina
Date: January 13, 2021
Time: 1033 eastern standard time (EST)
1533 coordinated universal time (UTC)
Airplane: Beechcraft F33, N266DC

B. AIR TRAFFIC CONTROL GROUP

Group Chair	Charles Olvis Air Traffic Control Investigator National Transportation Safety Board Washington, DC
Subject Matter Expert ¹	Paul Suffern Meteorologist National Transportation Safety Board Washington, DC
Group Member	John Kasel ATC Subject Matter Expert Federal Aviation Administration Washington, DC
Group Member	Curt Fischer Air Safety Investigator National Air Traffic Controllers Association Boston, MA

C. SUMMARY

On January 13, 2021, about 1033 eastern standard time (EST)², a Beech F33A, N266DC, was destroyed when it was involved in an accident near Columbia, South Carolina. The private pilot was fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

¹ A subject matter expert (SME) from AS-30 / MET was embedded with, but not an actual member of the ATC group. Detailed meteorological information is provided in the Meteorology Factual Report located in the public docket.

² All times are eastern standard time (EST) unless otherwise noted.

D. DETAILS OF THE INVESTIGATION

Shortly after the accident, an air traffic control (ATC) work group was formed. The group included the group chair from the NTSB, a subject matter expert from the FAA, and an air safety investigator (ASI) from NATCA. Also embedded with the ATC group, was a meteorologist from the NTSB. Due to COVID travel restrictions, the NTSB did not travel in support of this investigation and the ATC Group conducted their investigative activities virtually.

On February 1-2, the group conducted virtual interviews with the Watch Supervisor In-Charge (WSIC) and Radar North (RN) controllers that were on position at the time of the accident, as well as the Air Traffic Manager (ATM).

E. FACTUAL INFORMATION

1.0 History of Flight

Greer Airport Traffic Control Tower (GSP ATCT) and Columbia (CAE) ATCT were the ATC facilities that provided services to N266DC during the accident flight. The following timeline was developed using certified audio re-recordings and surveillance data³ provided by the FAA. Times are rounded to the nearest minute for brevity and altitudes are in feet above mean sea level (msl). This is a summary of pertinent communications between N266DC and air traffic control⁴.

- 0959 N266DC departed runway 19 at the Greenville Downtown Airport (GMU) in Greenville, South Carolina. The pilot was operating on a VFR⁵ flight plan and was enroute to the Jim Hamilton L B Owens Airport (CUB) in Columbia, South Carolina (see figure 1).
- 1000 The pilot of N266DC first contacted GSP ATCT and reported climbing through 1,300 feet for 3,000 feet. The GSP ATCT radar west (RW) controller radar identified the airplane and requested their on-course heading to CUB; the pilot responded that the on-course heading was 134°. The controller instructed the pilot to continue runway heading and to expect on-course in about five miles; the pilot acknowledged.

³ Both Radar and Automatic Dependent Surveillance-Broadcast (ADS-B) data were provided by the FAA and are referenced in this report. These are explained in greater detail in section E, subsection 2.0 of this report.

⁴ A partial transcript of pertinent pilot-ATC communications is included in Attachment 2: ATC Audio Partial Transcript.

⁵ VFR - Visual Flight Rules - Rules that govern the procedures for conducting flight under visual conditions. The term "VFR" is also used in the United States to indicate weather conditions that are equal to or greater than minimum VFR requirements. In addition, it is used by pilots and controllers to indicate type of flight plan.

- 1001 The controller instructed the pilot to turn left on course and to climb VFR to 5,500 feet; the pilot acknowledged.
- 1003 The pilot requested an altimeter check, and the controller advised the local altimeter was 30.15.
- 1007 After a first unsuccessful attempt, the pilot contacted the controller again and advised he would have to do a "pop-up" IFR⁶ to get into CUB. The controller acknowledged and confirmed the pilot was requesting IFR clearance into CUB; the pilot responded in the affirmative requested a cruise altitude of 5,000 feet.
- The controller then cleared N266DC to CUB and instructed the pilot to maintain 5,000 feet; the pilot acknowledged.
- 1009 The pilot requested to descend to 3,000 feet; the controller approved the request.
- 1015 The controller instructed the pilot to contact CAE ATCT; the pilot acknowledged.

During the time between 0945-1015, a review of the audio from the CAE RN control position revealed that the RN controller provided services to at least 5 aircraft departing/arriving either CUB or CAE, and 1 aircraft overflight. Of these aircraft, there were no PIREPs solicited by the controller, and one that was received unsolicited. The unsolicited PIREP received was never entered into AIS-R and was only disseminated to one aircraft at about 1016 when one of the uninvolved airplanes asked if aircraft were getting into CAE. See Attachment 2: ATC Audio Partial Transcript for detailed information on the communications during this time.

- 1016 The pilot contacted the CAE RN controller level at 3,000 feet. The RC controller acknowledged and issued the altimeter of 30.19; the pilot acknowledged.

[An uninvolved airplane asked the RN controller if airplanes were getting into Columbia. The RN controller advised there was a Boeing P-8 doing approaches into CAE and reported breaking out at minimums and that a CUB arrival had diverted into CAE as well.]

The RN controller instructed the pilot of N266DC to advise when he had the weather at CUB and what type approach he was requesting. The pilot requested the RNAV runway 13 approach⁷; the RN controller acknowledged.

⁶ IFR - Instrument Flight Rules [ICAO]- A set of rules governing the conduct of flight under instrument meteorological conditions.

⁷ The RNAV approach is an instrument approach procedure which relies on aircraft area navigation equipment for navigational guidance.

- 1017 The pilot asked the RN controller for the minimums at CUB and if there were any PIREPs⁸. The RN controller stated that he had no PIREPs for CUB or CAE but would check to see if anyone else knew.

Several seconds later, the RN controller advised the pilot that the last report was about 45 minutes ago by an aircraft that had attempted to land CUB but was unable; the pilot acknowledged.

- 1021 The RN controller instructed the pilot of N266DC to proceed direct to JSSTN⁹, cross JSSTN at 2,700 feet, then cleared the pilot for the RNAV GPS runway 13 approach into CUB; the pilot did not respond.
- 1022 The RN controller instructed the pilot of N266DC to proceed direct to JSSTN¹⁰, cross JSSTN at 2,700 feet, then cleared the pilot for the RNAV GPS runway 13 approach into CUB; the pilot acknowledged with a correct readback (see figure 2).
- 1028 The RN controller instructed the pilot to report cancelling his IFR clearance in the air or on the ground; the pilot acknowledged and said he would let him know.
- 1030 The RN controller issued the pilot alternate missed approach instructions to enter controlled airspace heading 050° and climb and maintain 2,500 feet; the pilot acknowledged with a correct readback (see figure 3).
- The RN controller instructed the pilot to change to advisory frequency; the pilot acknowledged.
- 1033 The pilot contacted the RN controller and advised there were on the missed approach. The RN controller acknowledged and instructed the pilot to fly heading 360° and when able to climb and maintain 2,500 feet. The pilot acknowledged and asked if that was a left turn to which the RC controller responded in the affirmative (see figure 4).
- The pilot acknowledged and read back 360° and asked what the weather was like at CAE. The RN controller advised that CAE was ¼ mile visibility with fog, an indefinite ceiling of 200 feet above ground level (agl), temperature and dew point of 2° Celsius (C), and advised he had the RVR¹¹. The pilot did not respond.

⁸ PIREP – Pilot Weather Report – A report made by a pilot of meteorological phenomena encountered by an aircraft in flight.

⁹ JSSTN was the initial approach fix (IAF) for the RNAV (GPS) Runway 13 approach into CUB.

¹⁰ JSSTN was the initial approach fix (IAF) for the RNAV (GPS) Runway 13 approach into CUB.

¹¹ RVR – Runway Visual Range – An instrumentally derived value, based on standard calibrations, that represents the horizontal distance a pilot will see down the runway from the approach end.

1034 The RN controller advised the pilot that radar contact was lost; the pilot did not respond and there were no further recorded transmissions received from the pilot of N266DC.

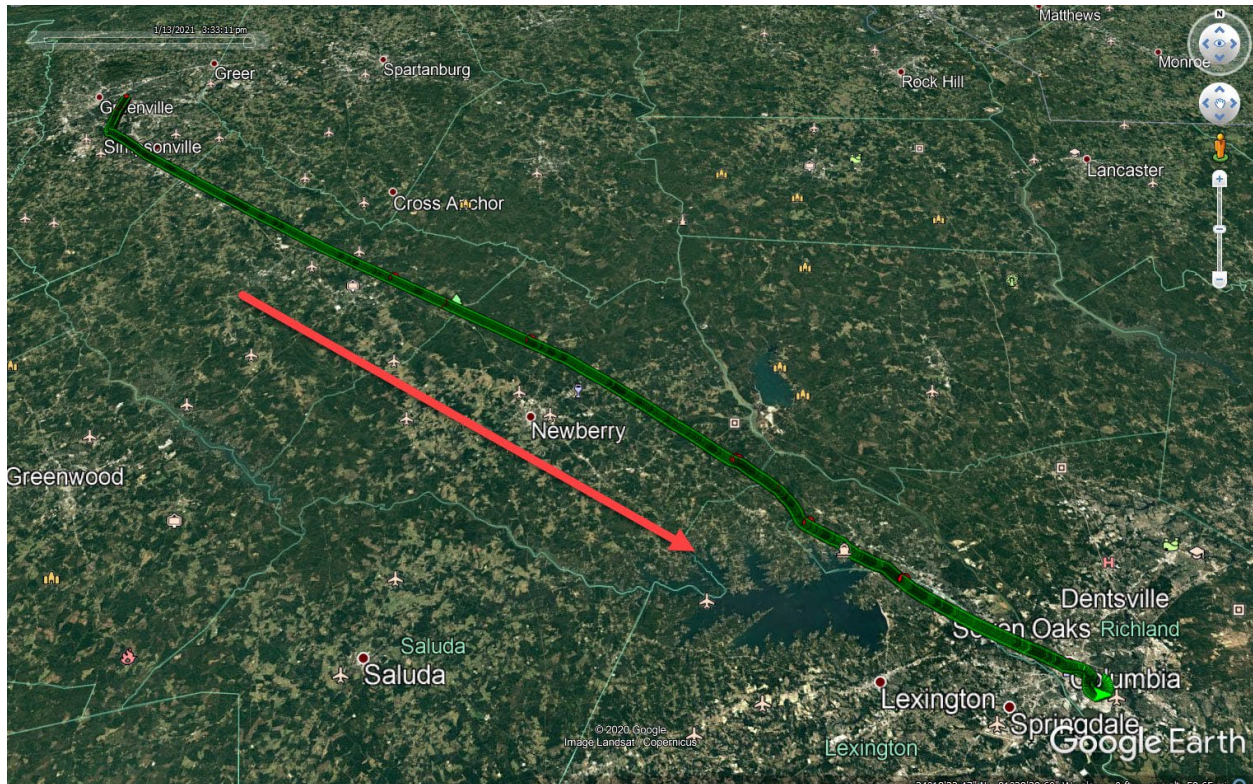


Figure 1. Graphic depicting the ADS-B derived accident flight track of N266DC.

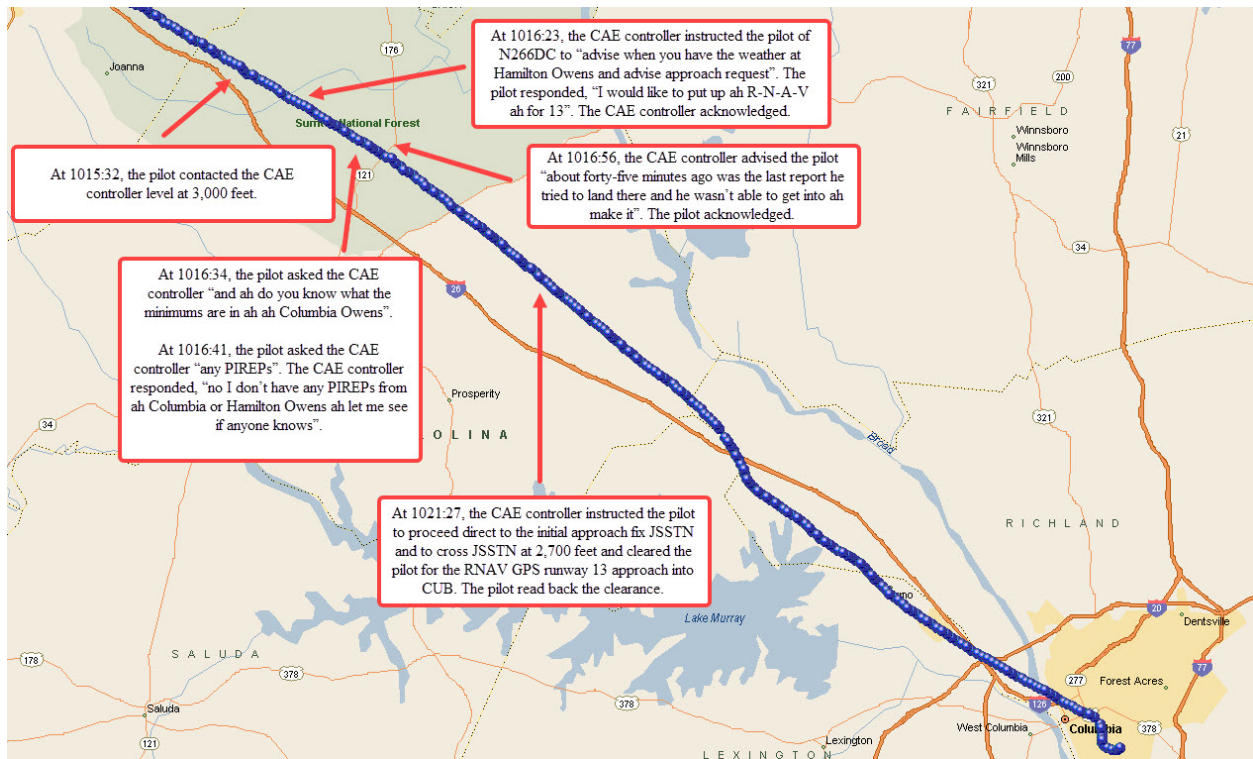


Figure 2. Graphic showing radar derived flight track and airplane location at key points in pilot-controller communication.

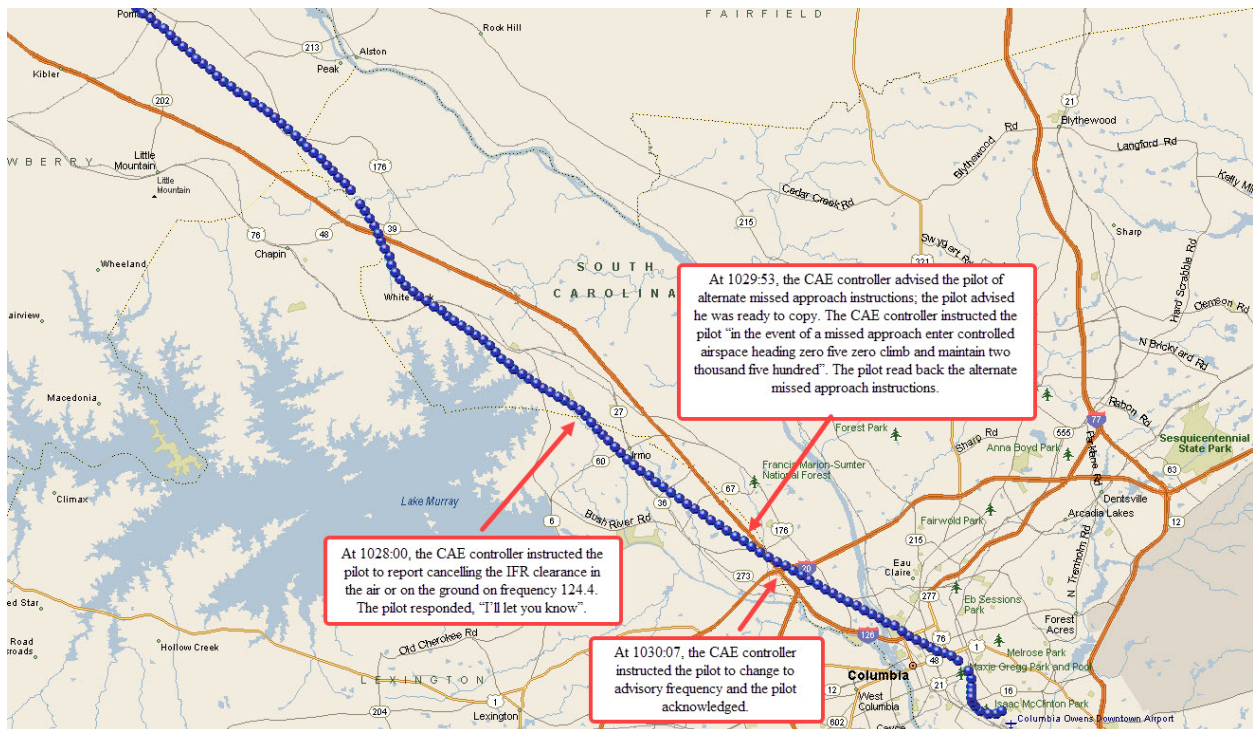


Figure 3. Graphic showing radar derived flight track and airplane location at key points in pilot-controller communication shown.



Figure 4. Graphic showing ADS-B derived flight track and airplane location through the missed approach sequence of the accident flight with key pilot-controller communication shown.

2.0 Radar and Surveillance 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. The CAE ATCT ASR¹² was the primary radar sensor that provided coverage of the accident airplane's flight track in this event¹³.

ADS-B data is aircraft global positioning system (GPS) derived position reports and other aircraft information transmitted by the airplane and received through a ground infrastructure and shared with other users within the national airspace system (NAS). Air traffic controllers across the nation can monitor aircraft using either ground-based radar or ADS-B.

To improve the consistency and reliability of ADS-B and radar returns, airplanes are equipped with transponders. For ADS-B equipped airplanes, the transponders are assigned a unique Mode-S address for each airplane. The accident

¹² ASR – Airport Surveillance Radar – Approach control radar used to detect and display an aircraft's position in the terminal area. ASR provides range and azimuth information but does not provide elevation data. Coverage of the ASR can extend up to 60 miles.

¹³ FAA Radar source data is located in Attachment 3: Radar Data.

airplane's assigned Mode S transponder address was A29595, and the accident airplane was assigned a discrete transponder beacon code of 2016¹⁴.

Both radar data sourced from the CAE ATCT ASR and ADS-B data were provided by the FAA and were used in producing the graphics in this report.

3.0 Meteorological Information

Jim Hamilton L B Owens Airport (KCUB), Columbia, SC, at an elevation of 193 feet had an Automated Surface Observing System (ASOS¹⁵) whose reports were not supplemented. The latest section chart for the area indicated a magnetic variation of 6° W over the area.

Surrounding the time of the accident the following reports were disseminated to users. A review of the NWS products indicated that no SIGMETs¹⁶ or Convective SIGMETs were current over the route of flight, however Center Weather Advisory (CWA¹⁷) #203 and AIRMET¹⁸ Sierra warning of IFR conditions were both valid for the area at the time of the accident and are detailed in sections 3.3 and 3.4 below. The following conditions were being reported at the time of the accident.

3.1 Surface Observations

The area surrounding the accident site was documented using official Aviation Routine Weather Reports (METARs)¹⁹ and Specials (SPECIs)²⁰. The following observations were taken from standard code and are provided in plain language.

¹⁴ FAA ADS-B source data is located in Attachment 4: ADS-B Data.

¹⁵ 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 special observations if weather conditions change rapidly and cross aviation operation thresholds.

¹⁶ 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.

¹⁷ 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.

¹⁸ 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.

¹⁹ 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.

²⁰ SPECI - Special Weather Report - An unscheduled report taken when weather conditions meet specified criteria, are observed during the period between regular hourly reports. A SPECI is used as soon as possible after the relevant criteria is observed.

At 0953, CUB²¹ reported wind calm, visibility 1/4 statute mile, fog, vertical visibility 200 feet agl, temperature 2° C, dew point temperature 2° C, and an altimeter 30.21 inches of mercury (inHg). Remarks: automated station with a precipitation discriminator, sea level pressure 1023.0 hPa, temperature 2.2° C, dew point temperature 2.2° C, 3-hourly pressure increase of 1.2 hPa.

The following automated longline²² observations were taken and disseminated on weather circuits and general flight categories were as follows:²³

LIFR [0853 EST] METAR KCUB 131353Z AUTO 27003KT M1/4SM FG
VV002 02/02 A3019 RMK AO2 SLP225 T00220022=

*LIFR [0953 EST] METAR KCUB 131453Z AUTO 00000KT 1/4SM FG
VV002 02/02 A3021 RMK AO2 SLP230 T00220022 53012=*

LIFR [1053 EST] METAR KCUB 131553Z AUTO 24005KT 1/4SM FG
VV002 03/03 A3020 RMK AO2 SLP227 T00280028=

The observations from CUB surrounding the accident time indicated LIFR²⁴ conditions with vertical visibility of 200 feet agl.

3.2 Pilot Reports

A search of pilot weather reports or PIREPs revealed there were no publicly longline-disseminated PIREPs²⁵ distributed into the national airspace system (NAS) by CAE ATCT on the date of the accident.²⁶ PIREP information was reviewed from about

²¹ The NWS uses the 4-digit International Civil Aviation Organization (ICAO) format for station identifiers (as seen in the body of some formatted weather observations). This report uses the 3-digit International Air Transport Association format for station identification, which does not use the geographic designating digit ("K" for stations in the continental U.S. and "P" for U.S. stations in Alaska and the Pacific region) as found in the ICAO format.

²² "Longline" refers to the dissemination of weather observations with the intent that they are available in near-real time to national databases (effectively, the whole world) and accessible to the general global public from a large number of vendors. This does not include public accessibility to observations from a reporting station's Very High Frequency (VHF; line-of-site) or telephone broadcast, where applicable. Longline dissemination of weather observations is the primary vehicle through which the general global public has access to surface weather observations, particularly outside of the aviation community.

²³ The italicized 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.

²⁴ LIFR - Low Instrument Flight Rules - Flight conditions as defined by the NWS and FAA as - ceiling below 500 feet agl and/or visibility less than 1 statute mile.

²⁵ These do not include pilot reports only broadcast via radio.

²⁶ For more information, please see the Meteorology Factual Report located in the public docket.

three hours prior to the accident time to two hours after the accident time and there was only 1 PIREP (at 1132) within 50 miles of the accident site below 15,000 ft msl:

KSSC UA /OV KSSC/TM 1632/FLUNKN/TP F16/SK OVC008-TOP035/RM DURD

3.3 Center Weather Advisories

The Jacksonville (ZJX) Air Route Traffic Control Center (ARTCC) Center Weather Service Unit (CWSU) was responsible for the accident region. The ZJX ARTCC CWSU issued CWA #203 at 0902 EST valid for the accident site at the accident time which warned of LIFR conditions in mist and fog (see figure 5).

FAUS22 KZJX 131402
ZJX2 CWA 31400
ZJX CWA 203 VALID UNTIL 131600
FROM 40E CLT-25SE ILM-40SE IRQ-30NNE IRQ-40E CLT
AREA LIFR CONDS IN BR FG. SLOW IMPROVEMENT THRU PD.
NC SC

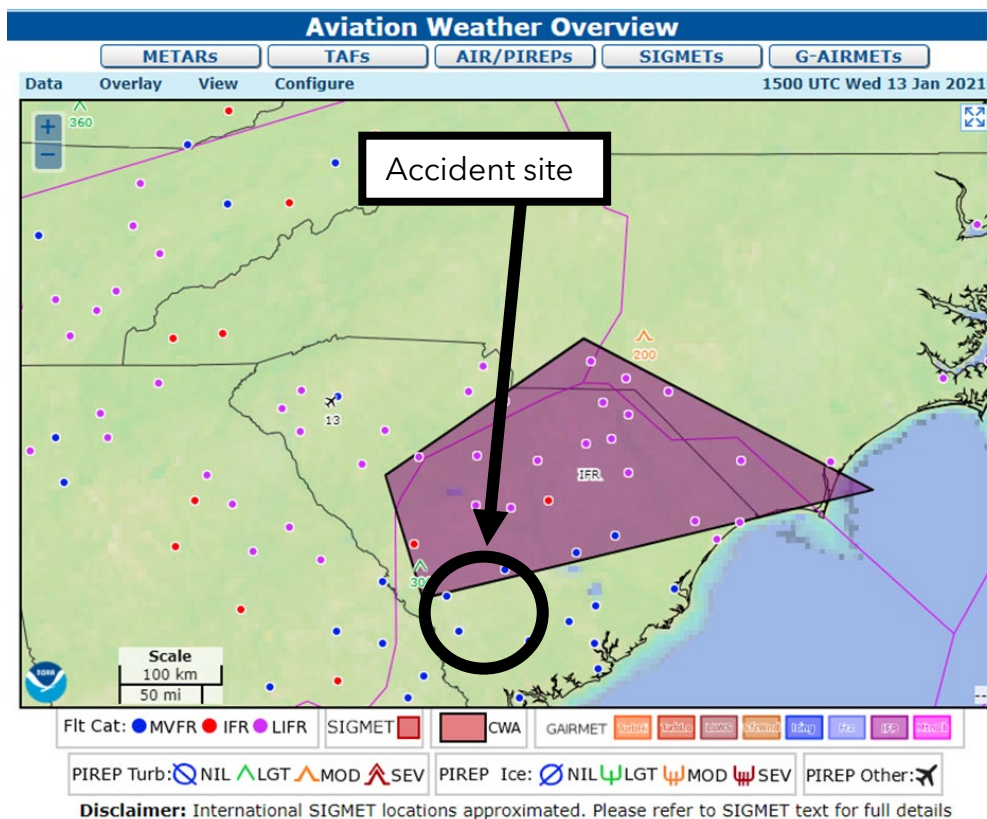


Figure 5. SIGMETs, PIREPs, and CWAs valid at 1000 EST through 1100 EST.

3.4 AIRMETs

AIRMET Sierra was valid for the accident site at the accident time (issued at 0945 and 0345 EST). The AIRMET warned of IFR conditions due to fog and mist (applicable excerpts from each provided below):

WAUS42 KKCI 131445
WA2S
-MIAS WA 131445
AIRMET SIERRA UPDT 2 FOR IFR AND MTN OBSCN VALID UNTIL 132100

*AIRMET IFR...NC SC GA FL AND CSTL WTRS
FROM 30ENE RIC TO 30E ORF TO 80SSE ECG TO 70SSW ILM TO 60SSE IRQ
TO 20SE AMG TO 60S TLH TO 70SE CEW TO 60SSE SJI TO 40W CEW TO
50SW PZD TO GQO TO 40E VXV TO 20E CLT TO 70ESE RDU TO 30ENE RIC
CIG BLW 010/VIS BLW 3SM BR/FG. CONDS ENDG 15-18Z.*

WAUS42 KKCI 130845
WA2S
-MIAS WA 130845
AIRMET SIERRA UPDT 1 FOR IFR AND MTN OBSCN VALID UNTIL 131500

*AIRMET IFR...NC SC GA FL WV VA AND CSTL WTRS
FROM 40W BKW TO 60SSE SBY TO 70SE ECG TO 40ESE SAV TO 30NE OMN
TO CTY TO 70SE CEW TO 50S CEW TO 60SE SJI TO 40W CEW TO 50SW PZD
TO GQO TO HNV TO 40W BKW
CIG BLW 010/VIS BLW 3SM BR/FG. CONDS CONTG BYD 15Z ENDG 15-18Z.*

3.5 Terminal Aerodrome Forecast

CUB was the closest airport to the accident site with an NWS Terminal Aerodrome Forecast (TAF)²⁷. The CUB TAF valid at the time of the accident was issued at 0924 EST and was valid for a 22-hour period beginning at 0900 EST. The 0924 EST TAF for CUB was as follows:

KCUB 131424Z 1314/1412 00000KT 1/4SM FG VV002
FM131600 VRB03KT 5SM BR OVC006
FM131900 23004KT P6SM BKN025
FM132200 21004KT P6SM BKN060=

Between 0900 and 1100 EST, the forecast expected a calm wind, 1/4 statute mile visibility, fog, and vertical visibility of 200 feet agl.

²⁷ According to NWS Instruction 10-813: "An NWS TAF consists of the expected meteorological conditions significant to aviation at an airport for a specified time period. For the U.S., this is the area within five (5) statute miles (SM) of the center of an airport's runway complex."
www.nws.noaa.gov/directives/sym/pd01008013curr.pdf

3.6 Pilot Weather Briefing

According to Leidos Flight Service, there was no record of the accident pilot receiving or requesting a pilot weather briefing for the day of the accident.

A search of archived ForeFlight information indicated that the accident pilot did not request weather information via ForeFlight. There was no record of the accident pilot receiving or retrieving any other weather information before or during the accident flight.

4.0 CUB RNAV (GPS) Runway 13 Approach

A standard instrument approach procedure (SIAP) is a series of predetermined maneuvers for the transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing or to a point from which a landing may be made visually. The instrument approach being flown just prior to the accident was the RNAV (GPS) RWY 13, effective December 31, 2020, to January 28, 2021 (see figure 6).

Localizer Performance without Vertical Guidance (LP) are non-precision approaches with Wide Area Augmentation System (WAAS) lateral guidance. They are added in locations where terrain or obstructions do not allow publication of vertically guided LPV procedures. Lateral sensitivity increases as an aircraft gets closer to the runway. LP minimums will not be published with lines of minima that contain approved vertical guidance (LNAV/VNAV or LPV).

Lateral Navigation (LNAV) are non-precision approaches that provide lateral guidance. The pilot must check RAIM (Receiver Autonomous Integrity Monitoring) prior to the approach when not using WAAS equipment.

Both LP and LNAV lines of minima are Minimum Descent Altitudes (MDAs) rather than Decision Altitudes (DAs). It is possible to have LP and LNAV published on the same approach chart. An LP is published if it provides lower minima than the LNAV.

Each SIAP has associated weather minimums of visibility and sky conditions that determine how low an airplane may travel while flying down the final approach course. If the pilot flying the IAP reaches the published minimums for that approach, and has the runway environment in sight, they may continue to land visually. Conversely, if the airplane reaches the published minimums without the runway in sight, the pilot is authorized to execute the published missed approach. The published minimum descent altitude for the CUB RNAV (GPS) Runway 13 LP was 780 feet msl and 1 statute mile. The published minimum descent altitude for the CUB RNAV (GPS) Runway 13 LNAV was 1060 feet msl and 1 statute mile.

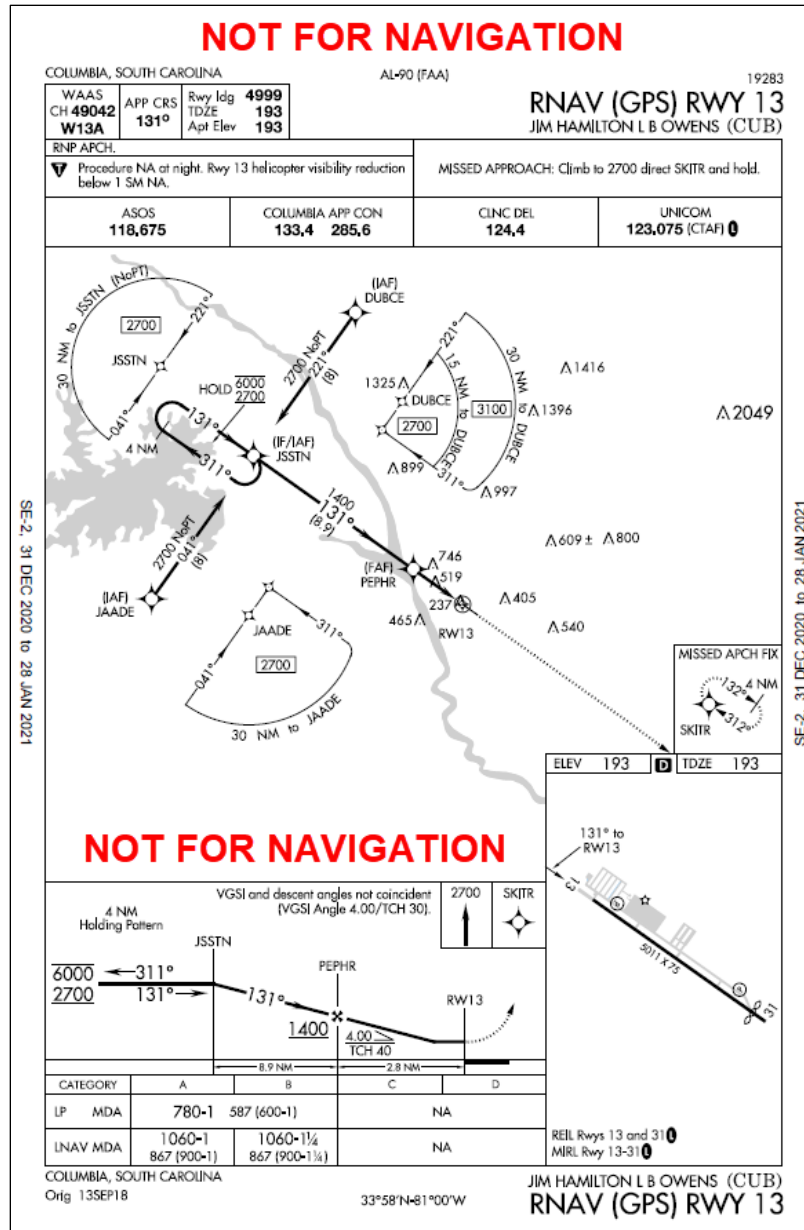


Figure 6. Graphic of the CUB RNAV (GPS) Runway 13 Approach.

5.0 Air Traffic Control Personnel

5.1 Watch Supervisor in Charge

The Watch Supervisor in Charge (WSIC)²⁸ entered onto duty with the FAA in March 2014, reporting to the FAA training facility in Oklahoma City, Oklahoma. He graduated in May 2014 and reported to New York Terminal Radar Approach Control (N90 TRACON). He left N90 TRACON in September 2015 and reported to CAE ATCT.

²⁸ During the investigation, the FAA referred to the position as the WSIC, though facility guidance and documentation referred to the position as Operational Controller in Charge (OCIC).

Prior to the FAA, the WSIC served in United States Air Force (USAF) as an air traffic controller. He joined the USAF in November 2003 and reported to Shaw Air Force Base (SSC) for duty. He remained at SSC until November 2011 when he was honorably discharged from the USAF. After the USAF, he worked as an air traffic controller for Midwest ATC in Afghanistan from December 2011 until December 2013. He was certified on all operating positions and was designated as a Controller in Charge (CIC). He held a current class 2 medical clearance certificate with no restrictions.

5.2 Air Traffic Manager

The ATM entered onto duty with the FAA in July 2002 reporting to the FAA training facility in Oklahoma City, Oklahoma. She graduated in September 2002 and reported to Greensboro (GSO) ATCT. In March 2007 she left GSO ATCT and reported to Florence (FLO) ATCT. She left FLO ATCT in March 2008 and reported to CAE ATCT, then left in April 2015 reporting back to FLO ATCT as an operations supervisor (OS). In July 2019 she was detailed to FAA Headquarters until April 2020 when she returned to CAE ATCT as the acting ATM. In September 2020 she was designated permanent ATM. She was not qualified on any operating positions, did not have a current medical certificate, and was not required to.

5.3 Radar Controller

The radar controller entered on duty with the FAA in May 2017 reporting directly to CAE ATCT for duty. Prior to the FAA, he was in the USAF from July 2009 to May 2017 and was stationed at Tyndall AFB from March 2010 to May 2013 and Royal Air Force Base (RAF) Lakenheath from May 2013 to March 2017 when he was honorably discharged from the USAF. He held a current class 2 medical clearance certificate with no restrictions.

6.0 Air Traffic Control Procedures

6.1 National Orders

6.1.1 FAA Order JO 7110.65Y, Air Traffic Control

Chapter 1, section 1, *Purpose of this Order*, paragraph 1-1-1 prescribes the purpose and expectation of FAA Order JO 7110.65Y, *Air Traffic Control*, and stated [in part]:

1-1-1. PURPOSE OF THIS ORDER

This order prescribes air traffic control procedures and phraseology for use by persons providing air traffic control services. Controllers are required to be familiar with the provisions of this order that pertain to their operational

responsibilities and to exercise their best judgment if they encounter situations that are not covered by it.

Chapter 2, section 6, *Weather Information*, paragraph 2-6-1 addresses weather familiarization and stated [in part]:

2-6-2. PIREP SOLICITATION AND DISSEMINATION

Controllers must become familiar with pertinent weather information when coming on duty and stay aware of current and forecasted weather information needed to perform ATC duties.

NOTE – Every phase of flight has the potential to be impacted by weather, and emphasis must be placed on gathering, reporting, and disseminating weather information.

Chapter 2, section 6, *Weather Information*, paragraph 2-6-2 addresses Pilot Report (PIREP) and states [in part]:

Emphasis must be placed on the solicitation and dissemination of Urgent (UUA) and Routine (UA) 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. Controllers must provide the information in sufficient detail to assist pilots in making decisions pertinent to flight safety.

NOTE – Routine PIREPs indicating a lack of forecasted weather conditions, for example, a lack of icing or turbulence, are also valuable to aviation weather forecasters and pilots. This is especially true when adverse conditions are expected or forecasted but do not develop or no longer exist.

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 cloud coverage when available. Additionally, when providing approach control services, ensure that at least one descent/climb-out PIREP and other related phenomena is obtained each hour.
2. Visibility (surface or aloft) at or less than 5 miles.

b. Record with the PIREPs:

1. Time.

2. Aircraft position.
3. Type aircraft.
4. Altitude.
5. When the PIREP involves icing include:
 - (a) Icing type and intensity.
 - (b) Air temperature in which icing is occurring.
- d. Disseminate PIREPs as follows:
 1. Relay pertinent PIREP information to concerned aircraft in a timely manner.
 3. *TERMINAL*. Relay all operationally significant PIREPs to:
 - (a) The appropriate intrafacility positions.
 - (b) The OS/CIC for long line dissemination via an FAA approved electronic system (for example, AIS–R, or similar systems); or,
 - (c) Outside Alaska: The overlying ARTCC’s Flight Data Unit for long–line dissemination.

Chapter 4, section 7, *Arrival Procedures*, paragraph 4-7-10 addresses approach information and stated [in part]:

4–7–10. APPROACH INFORMATION

- a. Both en route and terminal approach control sectors must provide current approach information to aircraft destined to airports for which they provide approach control services. This information must be provided on initial contact or as soon as possible thereafter. Approach information contained in the ATIS broadcast may be omitted if the pilot states the appropriate ATIS code. For pilots destined to an airport without ATIS, items 3–5 below may be omitted after the pilot advises receipt of the automated weather; otherwise, issue approach information by including the following:
 3. Surface wind.
 4. Ceiling and visibility if the reported ceiling at the airport of intended landing is below 1,000 feet or below the highest circling minimum, whichever is greater, or the visibility is less than 3 miles.
 5. Altimeter setting for the airport of intended landing.

6.1.2 FAA Order JO 7210.3(BB), Facility Operation and Administration

Chapter 1, Section 1, paragraph 1-1-1 *Purpose of this Order*, prescribes the purpose and expectation of FAA 7210.3BB, *Facility Operation and Administration*, and stated [in part]:

1-1-1. PURPOSE OF THIS ORDER

This order provides instructions, standards, and guidance for operating and managing air traffic facilities.

Chapter 2, Section 6, paragraph 2-6-1 *Watch Supervision*, prescribes the purpose and expectation of FAA 7210.3BB, *Facility Operation and Administration*, and stated [in part]:

2-6-1. WATCH SUPERVISION

a. Watch supervision requires maintaining situational awareness (defined below) of traffic activity and operational conditions in order to provide timely assistance to specialists and that ensure available resources are deployed for optimal efficiency. Watch supervision may be performed by a manager, supervisor, or controller-in-charge (CIC). The objectives and tasks of watch supervision must be specified in a facility directive, which is focused on operational requirements. The directive must specify, as a minimum, the required tasks for maintaining a safe and efficient operation. These tasks must include, but are not limited to:

1. The requirement to provide guidance and goals for the shift.
2. Monitoring/managing traffic volume/flow.
3. Position assignments.
4. Position relief.
5. Training assignments.
6. Processing leave requests (e.g., leave approval).
7. Configuring/monitoring/reporting equipment status.
8. Data collection and reporting.
9. Monitoring presidential aircraft and reporting security requirements.
10. Situational awareness is defined as a continuous extraction of environmental information, integration of this information with previous knowledge to form a coherent mental picture, and the use of that picture in directing further perception and anticipating future events. Simply put, situational awareness means knowing what is going on around you.

11. Management of the operational environment with a goal toward eliminating distractions of:

- (a) Non-operationally related activities or tasks that are distracting, such as controller schedule or leave bidding.
- (b) Non-operationally needed items and equipment.
- (c) When activities or tasks that are not time critical or operationally necessary become distracting to the operation, watch supervision must take steps to defer or relocate these activities or tasks.

12. Administrative duties must not be accomplished to the detriment of any operational duty.

NOTE – Individuals medically disqualified or taking medically disqualifying substances must not be assigned watch supervision duties, in accordance with Para 2–8–6, Restricted Drugs.

b. In the role of watch supervision, a CIC must perform these duties in accordance with management direction, with the following exceptions:

- 1. Evaluating and counseling employees on their performance.
- 2. Recommending selections, promotions, awards, disciplinary actions, and separations.
- 3. Site Coordinator for drug or alcohol testing.

Chapter 2, Section 6, paragraph 2-6-2 *Watch Supervision Assignments*, prescribes the purpose and expectation of watch supervision in the FAA 7210.3BB, *Facility Operation and Administration*, and stated [in part]:

2–6–2. Watch Supervision Assignments

- a. Efficient air traffic services require watch supervision regardless of the number of people assigned. Facilities must establish local procedures for watch supervision assignments.
- b. Where authorized, when two or more operations managers are assigned to the shift, one must be designated as the Operations Manager in Charge (OMIC). The OMIC is responsible for the day-to-day, shift by shift, management of the control room operation.
- c. When two or more supervisory traffic management coordinators (STMC) are on duty, one must be assigned as supervisory traffic management coordinator-in-charge (STMIC).
- d. When two or more operations supervisory personnel are on duty in an operational area (for example, radar room, tower, ARTCC area, etc.), one must be assigned as in charge.

NOTE – These “in charge” personnel may be called OSIC, operations supervisor-in-charge (OS/CIC), or other names designated by the facility manager.

- e. When two or more specialists are on duty and no supervisory personnel are available, one specialist who is fully qualified and rated in the assigned operational area must be designated as CIC to perform the watch supervision duties.

NOTE – In combined radar/tower facilities, when there’s a tower CIC and TRACON CIC, one must be designated as the overall controller-in-charge (OCIC).

- f. At facilities where a specialist stands a watch alone, the responsibility for watch supervision becomes part of his/her duties.
- g. Personnel performing watch supervision duties may be required to perform operational duties in addition to watch supervision duties. The performance of operational duties should be done on a limited basis such as during periods of low activity.
- h. An individual is considered available for watch supervision when he/she is physically present in the operational area and is able to perform the primary duties of the function. If the supervisor/CIC leaves the operational area or is engaged in an activity which will interfere with or preclude the performance of watch supervision duties, then another qualified individual must be designated to supervise the watch.

Chapter 2, Section 6, paragraph 2-6-12 *Consolidating Tower/TRACON Functions*, prescribes the purpose and expectation of FAA 7210.3BB, *Facility Operation and Administration*, and stated [in part]:

2–6–12. Consolidating Tower/TRACON Functions

- a. At facilities where both tower and radar/nonradar approach control services are provided, the Air Traffic Manager (ATM) must ensure, to the maximum extent possible, that these functions are not normally consolidated during non-midwatch operations.
- b. The ATM must stipulate, in a facility directive, procedures for consolidating approach control functions in the tower cab. The directive, at a minimum, must address:
 - 1. When it is appropriate to permit the consolidation of operations to the tower cab,
 - 2. Required upward reporting to the General Manager during non-midwatch operations,

- c. At those locations with only one certified tower radar display (CTRD) in the tower cab, the facility directive must also address radar separation responsibilities, and other issues inherent in operations conducted with one CTRD in the tower cab.
- d. During midwatch operations (where the majority of hours fall between 10:30 p.m. and 6:30 a.m.) when traffic permits, all functions may be consolidated for meals or breaks.
- e. Air traffic managers must ensure that no less than two fully certified and current operational personnel are assigned to midnight shift, unless no such personnel are available for assignment.

6.2 Local Orders

6.2.1 CAE ATCT Order 7110.65F, Air Traffic Control Procedures

Chapter 1, Section 1, paragraph 1-1-1 *Introduction*, prescribes the purpose and expectation of CAE ATCT Order 7110.65F, *Air Traffic Control Procedures*, and stated [in part]:

1-1-1. PURPOSE

This Order describes Local Air Traffic Control Procedures used by personnel at Columbia Airport Traffic Control Tower (ATCT). Controllers are required to be familiar with the provisions of this Order that pertain to their operational responsibilities and to exercise their best judgment if they encounter situations that are not covered by it.

Chapter 2, section 6, *General Operating Procedures*, paragraph 2-2-8 addresses dissemination of weather information and states [in part]:

2-2-8. DISSEMINATION OF WEATHER INFORMATION

a. PIREPS.

(1) Solicit PIREPs when requested or when one of the following conditions exist or is forecast for the CAE ATCT area of responsibility:

- (a) Ceilings at or below 5000 feet.
- (b) Visibility (surface or aloft) at or less than 5 miles.
- (c) Thunderstorm or related phenomena.
- (d) Turbulence of moderate degree or greater.
- (e) Icing of light degree or greater.
- (f) Wind shear.
- (g) Volcanic activity including ash and sulfur gases.

- (h) Braking action advisories are in effect.
- (2) The specialist receiving the PIREP must:
 - (a) Record it on CAE Form 7110-1, Pilot Report (PIREP) Form.
 - (b) Relay pertinent PIREP information to affected aircraft and to intrafacility positions.
 - (c) Pass all operationally significant PIREPs (i.e., ceilings below user minimums or moderate or greater turbulence at or below 10000 feet) to the FLM/OCIC/CICC to be entered in the AISR.
 - (d) Relay significant PIREPS to Jacksonville Center when the condition may affect operations (i.e., icing or turbulence above 1000 feet).
 - (e) Record his or her initials under the initial block on the form.
- (3) When conditions require solicitation of PIREPs, FD must type the word PIREPS into the present weather portion of the IDS.
- (4) The FLM/OCIC/CICC must monitor the weather and ensure PIREPs are being solicited, broadcast, and disseminated when required. The FLM/OCIC/CICC must enter all operationally significant PIREPs in the AISR.
- (5) PIREPs must be included in all position relief briefings when conditions require the solicitation of PIREPs.
- b. The FLM/OCIC must review SIGMETs, AIRMETs, CWAs and other known or observed weather that may affect aircraft safety to determine the required distribution and dissemination of information in accordance with the provisions of FAA Order JO 7110.65.
- c. As part of the Watch Checklist, FLMs/OCICs must retrieve the terminal area forecast (TAF) from the web. The Tower CIC-C must also retrieve the TAF on the tower sign-on computer. The WS/OCIC/CIC-A/CIC-C must review the TAF at the beginning of and, as needed, during each shift. A link to the TAF web page is located on the desktop of each computer.
- d. At 0000Z, FLMs/OCICs must retrieve the Tower and TRACON PIREP logs, date each form, review the forms for accuracy and forward the forms to the support specialist the next day. No form is required if the weather was better than 5000 and 5 for that 24-hour period.

6.2.2 CAE ATCT Order 7210.3E, Facility Management

Chapter 1, Section 1, paragraph 1-1-1 *Introduction*, prescribes the purpose and expectation of CAE ATCT, *Operation and Management*, and states [in part]:

1-1. PURPOSE

This Order provides direction for the operation and management of Columbia ATCT.

Chapter 6, Section 6, *Non-Midshift Operations*, addresses the procedure for combining operating positions and states [in part]:

6-6. NON-MIDSHIFT OPERATIONS.

Unless extenuating circumstances exist, radar and tower operations must not be consolidated or combined during non-mid shift hours. Mid shift hours are defined as 2230-0600L. If radar functions need to be combined in the tower during non-mid shift hours:

- a. Contact the ATM.
- b. The ATM must notify the district manager by close of the next business day.

REFERENCE: FAA Order JO 7210.3 2-6-12 CONSOLIDATING TOWER/TRACON FUNCTIONS

F. LIST OF ATTACHMENTS

Attachment 1: Interview Summaries
Attachment 2: ATC Audio Partial Transcript
Attachment 3: Radar Data
Attachment 4: ADS-B Data

Submitted by:

Brian Soper
Lead Air Traffic Control Investigator

(This report is being submitted on behalf of Charles Olvis, the air traffic investigator who was the Group Chair for this investigation and is no longer employed with the NTSB)