



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

August 24, 2021

Group Chairman's Factual Report

AIR TRAFFIC CONTROL

ERA20LA315

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A. ACCIDENT

Location: Steinhatchee, FL
Date: September 13, 2020
Time: 1215 eastern daylight time (EDT)
1615 coordinated universal time (UTC)
Airplane: Vans RV9, N4889R

B. AIR TRAFFIC CONTROL GROUP

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C. SUMMARY

On September 13, 2020, about 1215 eastern daylight time, a Van's RV-9A, N4889R, was destroyed when it was involved in an accident near Steinhatchee, Florida. The pilot and a pilot-rated passenger were presumed to be fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The flight departed Jack Edwards Airport (JKA), Gulf Shores, Florida about 0903 central daylight time under an instrument flight rules flight plan with the destination of Ocala International Airport (OCF), Ocala, Florida. During the cruise portion of the flight, the pilot requested to divert to Cross City Airport (CTY), Cross City, Florida due to weather. He was cleared for the RNAV-A approach to CTY. About 25 miles west-northwest of CTY, the airplane turned left into an area of precipitation. Radar and radio contact were lost, and a search was initiated for the airplane.

D. DETAILS OF THE INVESTIGATION

The air traffic control (ATC) workgroup convened virtually via Zoom¹. The group joined virtually with the Federal Aviation Administration (FAA) Jacksonville Air Route Traffic Control Center (ZJX ARTCC) on Thursday, October 1, 2020. The group met with the ZJX air traffic manager (ATM) for an inbrief. Other's present were the facility representative from the National Air Traffic Controllers Association (NATCA), the FAA event investigation managers, representatives from the Jacksonville District, Eastern Service Area (ESA) quality control group, and ZJX staff representatives.

¹ A web-based platform used for conducting virtual meetings. <https://zoom.us/government>

The inbrief included a review of the accident sequence, area staffing breakdown, a discussion of previous weather-related corrective action plan implementation, sectorization description, weather impacting the accident sector, and proposed mitigation plans. Additionally, the workgroup conducted a review of facility documents and an En Route Automation Modernization² (ERAM) replay of the accident controller's display. The workgroup reviewed the training folders for the controllers to be interviewed and then conducted interviews of the ZJX acting operations manager on duty during the accident and the West Area accident controller.

On Friday, October 2, 2020, the workgroup reconvened virtually and conducted an interview with the West Area Controller in Charge. The work group requested additional data before concluding the virtual on-site portion of the investigation.

E. FACTUAL INFORMATION

1.0 History of Flight

At 1154:23³, the pilot of N4889R the first contacted the ZJX sector 13 controller level at 9,000 feet above mean sea level (msl) and requested the RNAV A approach into CTY. The Sector 13 controller acknowledged the pilot.

At 1155:15, the sector 13 controller asked the pilot "and ah eight niner romeo just confirm you wanted the rnav runway three one." The pilot responded "un ah negative ah eight niner ah romeo we would like the rnav alpha into cross city."

At 1155:32, the sector 13 controller acknowledged the pilot and cleared the flight direct to UGLUF⁴. The pilot read back the clearance.

At 1204:03, the sector 13 controller instructed the pilot of N4889R to "cross ugluf at or above three thousand cleared rnav alpha into ah cross city." The pilot responded, "alright ah cross ah ugluf at ah above ah three thousand cleared for the ah rnav alpha into cross city eight niner romeo."

According to ADS-B⁵ data, at 1214:13 the airplane was in a left turn to the north with a Mode C reported altitude of 6,500 feet msl. The last ADS-B target was at 1214:27 at a reported altitude of 6,100 feet MSL (see figure 1).

At 1218:09, the sector 13 controller transmitted "november eight niner romeo ah radar contact lost ah say position."

² ERAM processes flight and surveillance data and generates target data onto the radar display.

³ All times EDT unless otherwise noted.

⁴ UGLOF is the initial approach Fix (IAF) for the RNAV (GPS-A) into Cross City, FL.

⁵ ADS-B – Automatic Dependent Surveillance-Broadcast - A surveillance system in which an aircraft or vehicle to be detected is fitted with cooperative equipment in the form of a data link transmitter. The aircraft or vehicle periodically broadcasts its GPS-derived position and other information such as velocity over the data link, which is received by a ground-based transmitter/receiver (transceiver) for processing and display at an air traffic control facility.

At 1218:25, the sector 13 controller transmitted “november four eight eight nine romeo jax.”

At 1221:00, the sector 13 controller transmitted “november four eight eight nine romeo jax.”

At 1221:13, the sector 13 controller asked another pilot on frequency to attempt to contact the accident airplane. The pilot attempted to contact the accident airplane and reported there was no reply.

At 1223:19, an unknown pilot transmitted “eh november four eight eight nine romeo can you hear.” The sector 13 controller responded “november four eight eight nine romeo I have you loud and clear how me.” The pilot responded they were SilverWings61 and advised another controller asked them to attempt to contact the accident airplane. The sector 13 controller responded thank you and asked them to attempt to contact the accident airplane again. SilverWings61 attempted to contact the accident airplane again with no reply.

At 1225:19, a position relief briefing⁶ (PRB) began with another controller assuming responsibility for the sector. During the brief, the off going sector 13 controller said, “nobody was really deviating for this down here.” She added “this eight nine romeo disappeared I cleared him for approach into cross city he was doing the ah rnav alpha um (unintelligible transmission).” The oncoming controller asked the off going controller if N4889R had been cleared for the instrument landing system (ILS) Y approach into CTY. The off going sector 13 controller responded that she had cleared the pilot for the GPS Alpha and said she “lost him here” and said the back up transmitters were out of service so she could not talk to him. She advised they had a couple of aircraft attempt airborne communications with no reply. The off going sector 13 controller said she had not attempted to contact UNICOM⁷ and advised she was “going over there to see what they are doing.”

At 1227:52, the off going sector 13 controller advised the oncoming controller “I didn’t call the weather to silver wings.”

At 1228:11, the oncoming controller transmitted “silver wings sixty-one from your right [sic] in cross city and the northwest of cross city there are areas of moderate heavy precip out towards ah panama city if you need to deviate.”

There were no further transmissions pertaining to the accident airplane.

⁶ Procedure used by air traffic controllers to ensure that required information can be transferred between relieving and relieved controllers without loss of information.

⁷ UNICOM – Universal Communications – A station is an air-ground communication facility operated by a non - air traffic control private agency to provide advisory service at uncontrolled aerodromes and airports and to provide various non-flight services, such as requesting a taxi, even at towered airports.

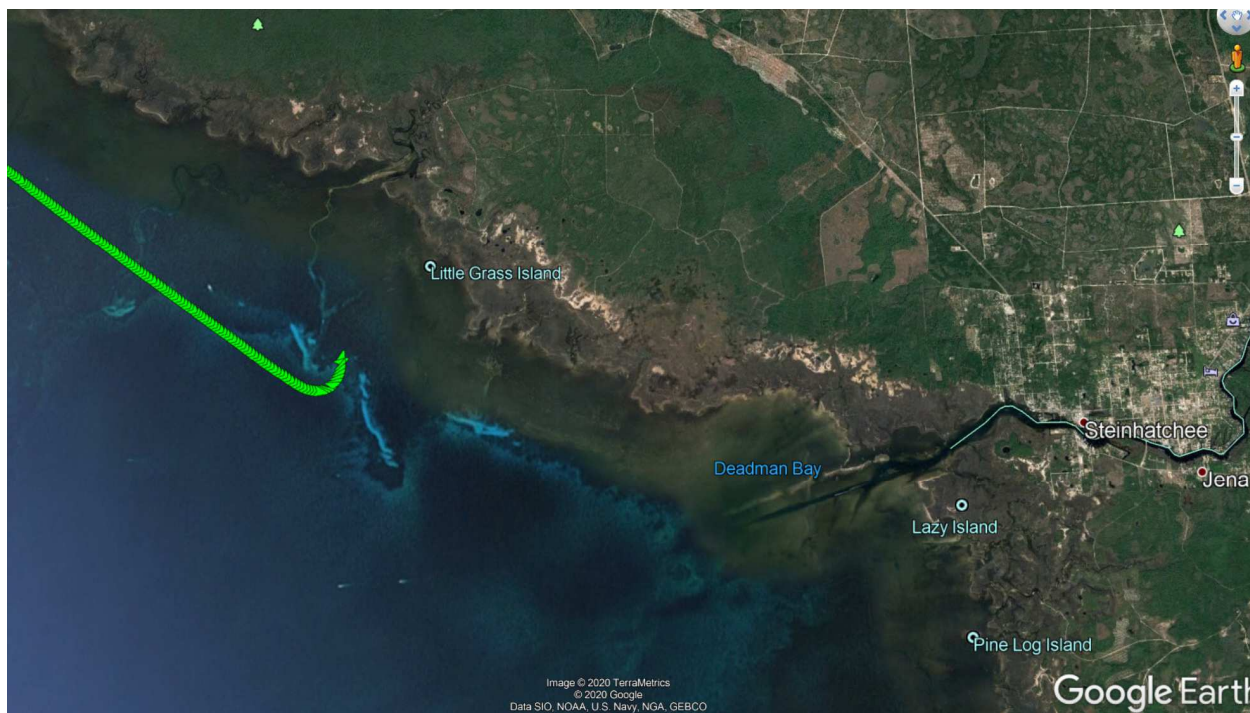


Figure 1 – ADS-B data showing the final target at 1214:27 at an altitude of 6,100 feet MSL.

2.0 Surveillance Data

The ERAM system processes flight and surveillance data, provides communications, and generates display data to air traffic controllers. ERAM has increased flexibility in routing around congestion, bad weather and other airspace restrictions.

ERAM provides core functionality for air traffic controllers and supports satellite-based systems such as ADS-B and data communication. Working together, all these systems enhance safety and improve efficiency. ADS-B is a performance-based surveillance technology that is more precise than radar. The accident aircraft was equipped with ADS-B and the ADS-B data was provided from the FAA. The data was of good quality and was used for the investigation. Figure 2 illustrates the flight track of N4889R from departure until the last target was received. After the accident, the FAA secured the sector 13 ERAM replay which contained the sector 13 controller preference settings and display intensities.

The FAA provided photographs of the sector 13 ERAM display playback at one-minute intervals. Figure 3 shows the location of N4889R and the displayed precipitation at 1203:50 just before the sector 13 controller cleared the pilot for the RNAV A approach. Figure 4 shows a close-up of the flight track and displayed precipitation at 1203:50.

Figure 5 shows the last detected position of N4889R and the displayed precipitation at 1214:50, 23 seconds after the last ADS-B data was received from the aircraft. Figure 6 shows a close-up of the flight track and displayed precipitation.

Figure 7 shows the position of the displayed weather at 1227:50 when the PRB occurred, and the oncoming controller advised Silver Wings 61 of precipitation near CTY.

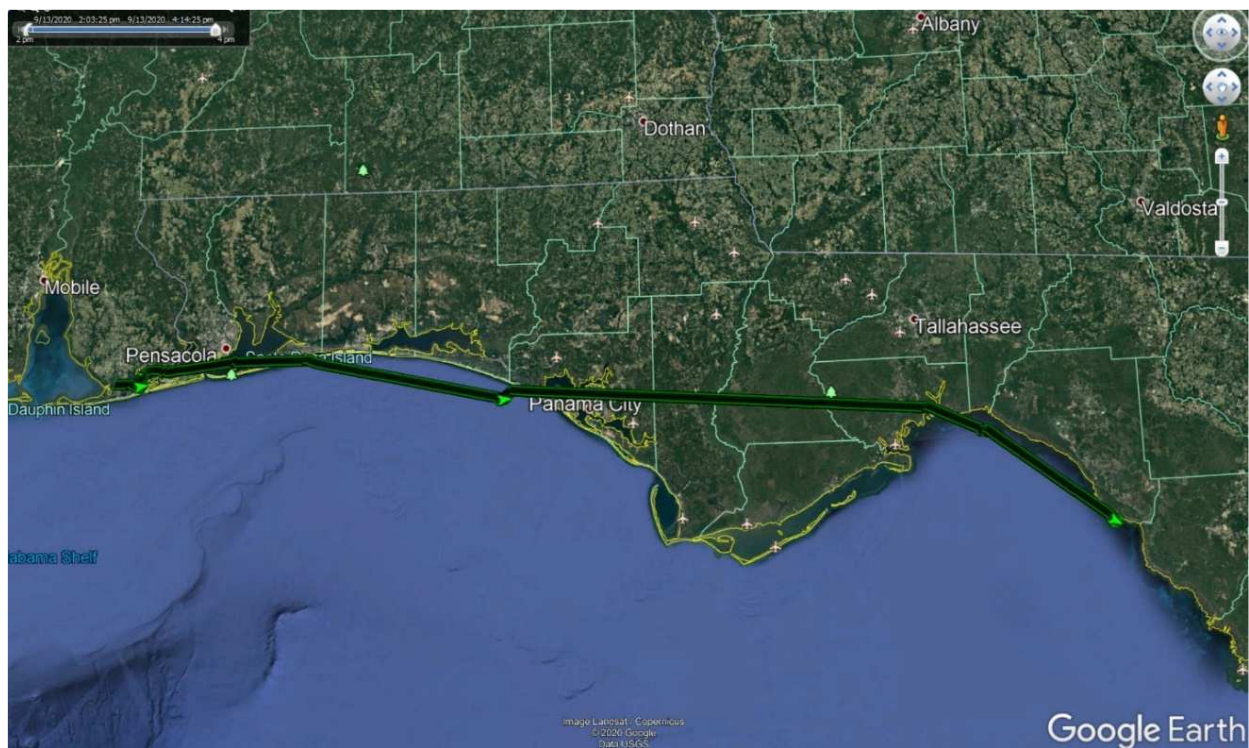


Figure 2 – ADS-B data indicating the entire flight of the accident airplane.

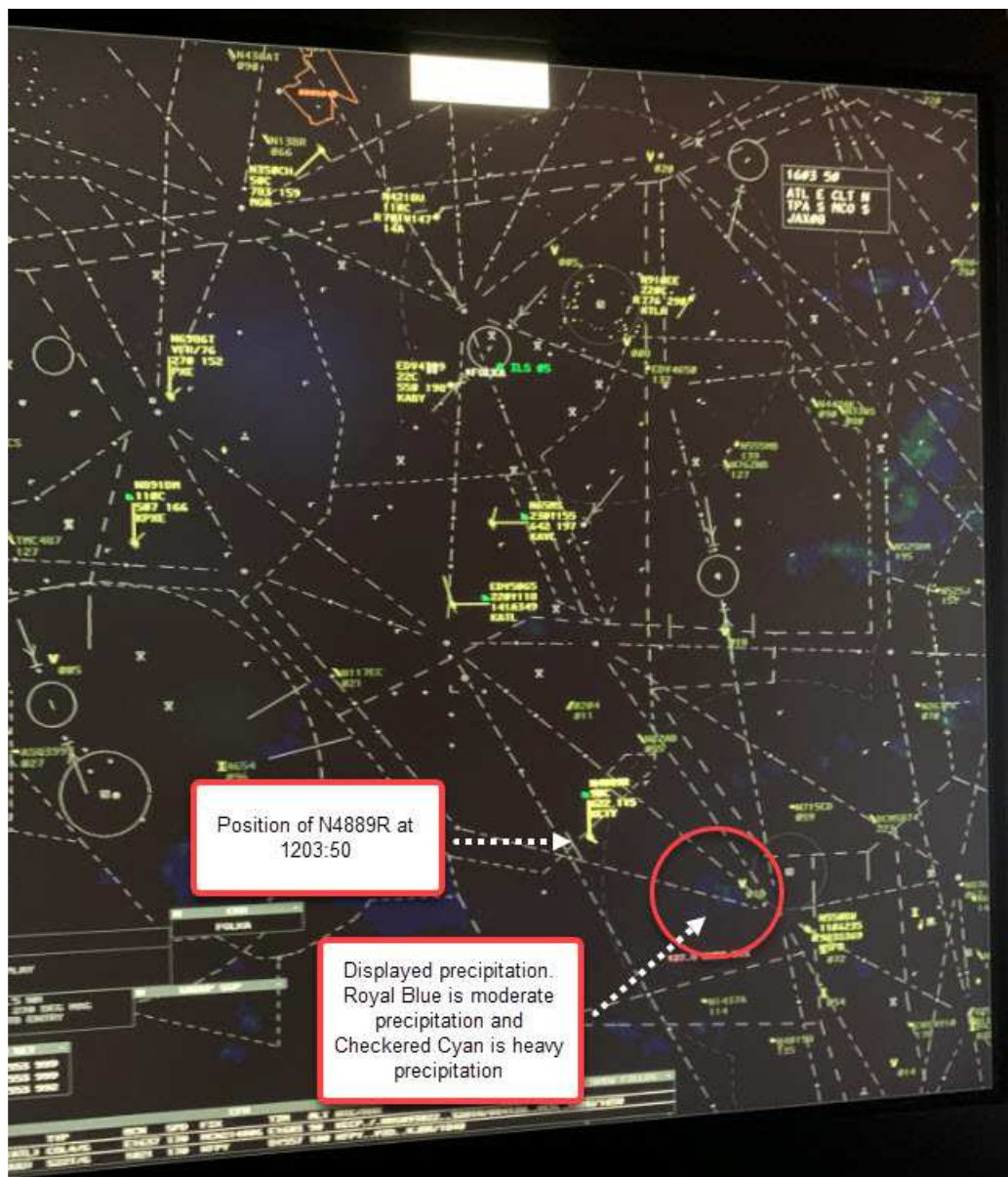


Figure 3 - The location of N4889R and the displayed precipitation at 1203:50 just before the sector 13 controller cleared the pilot for the RNAV A approach.

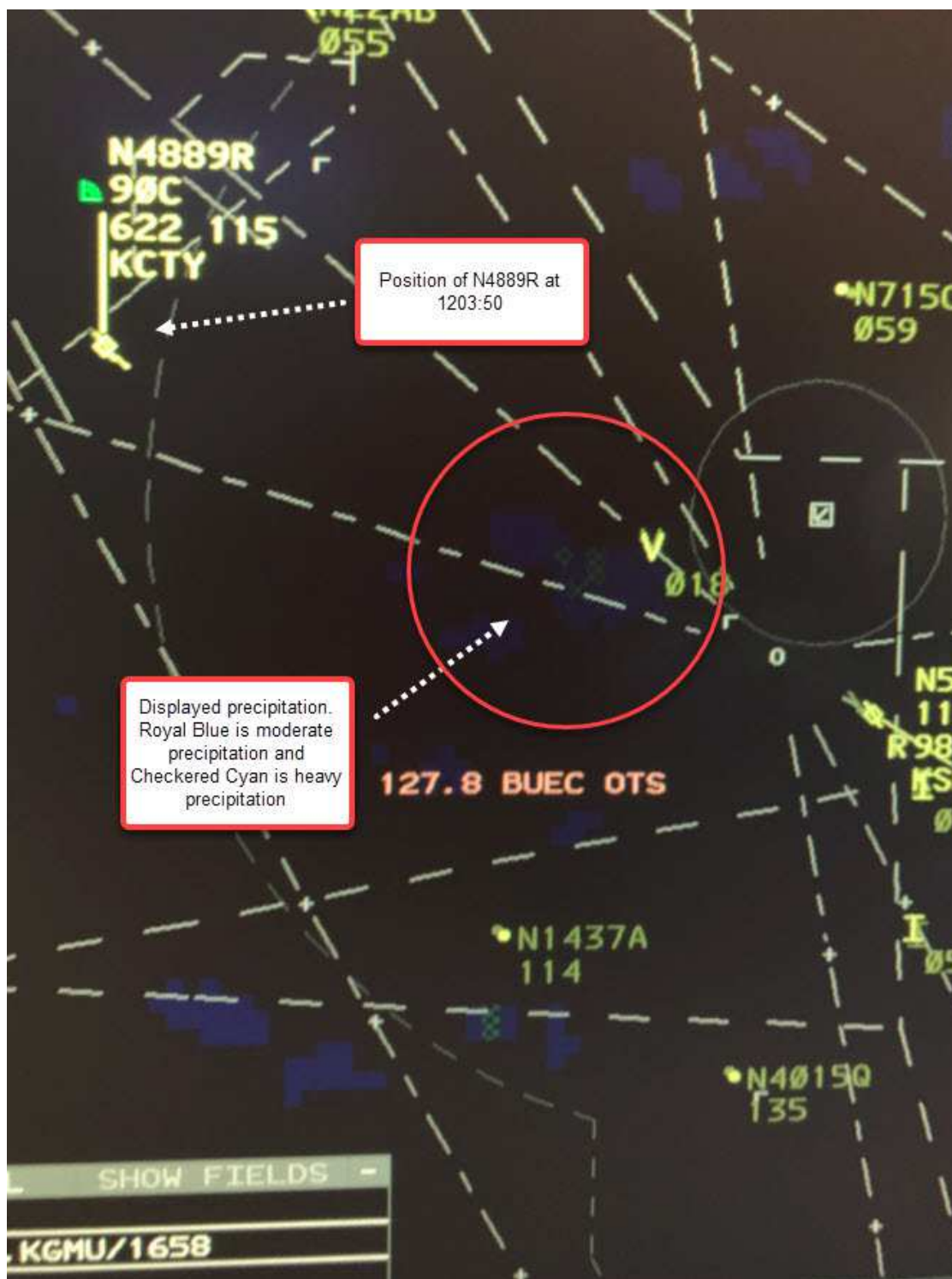


Figure 4 - A close-up of the flight track and displayed precipitation at 1203:50.

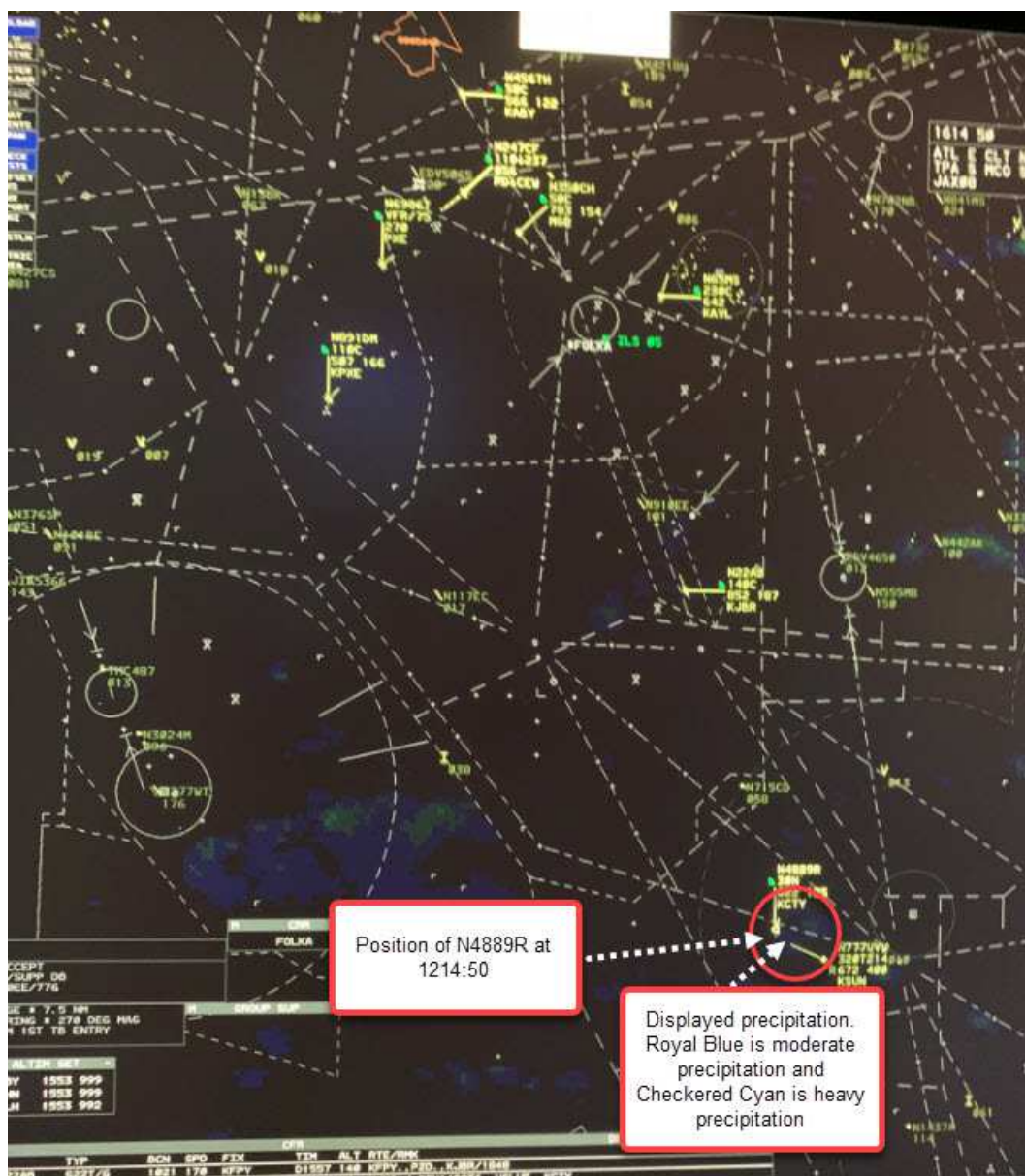


Figure 5 - The last detected position of N4889R and the displayed precipitation at 1214:50, 23 seconds after the last ADS-B data was received from the aircraft.

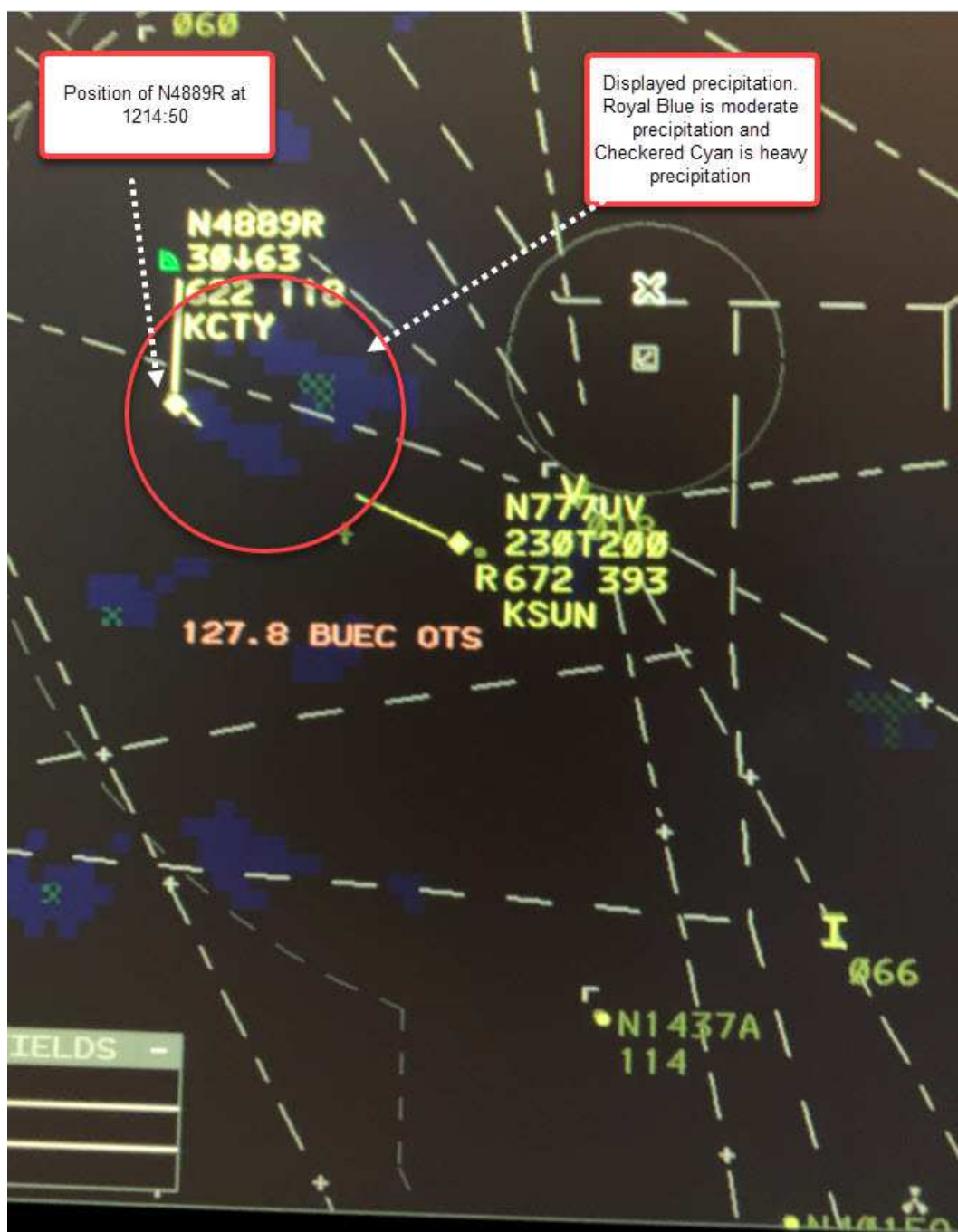


Figure 6 - A close-up of the flight track and displayed precipitation at 1214:50.

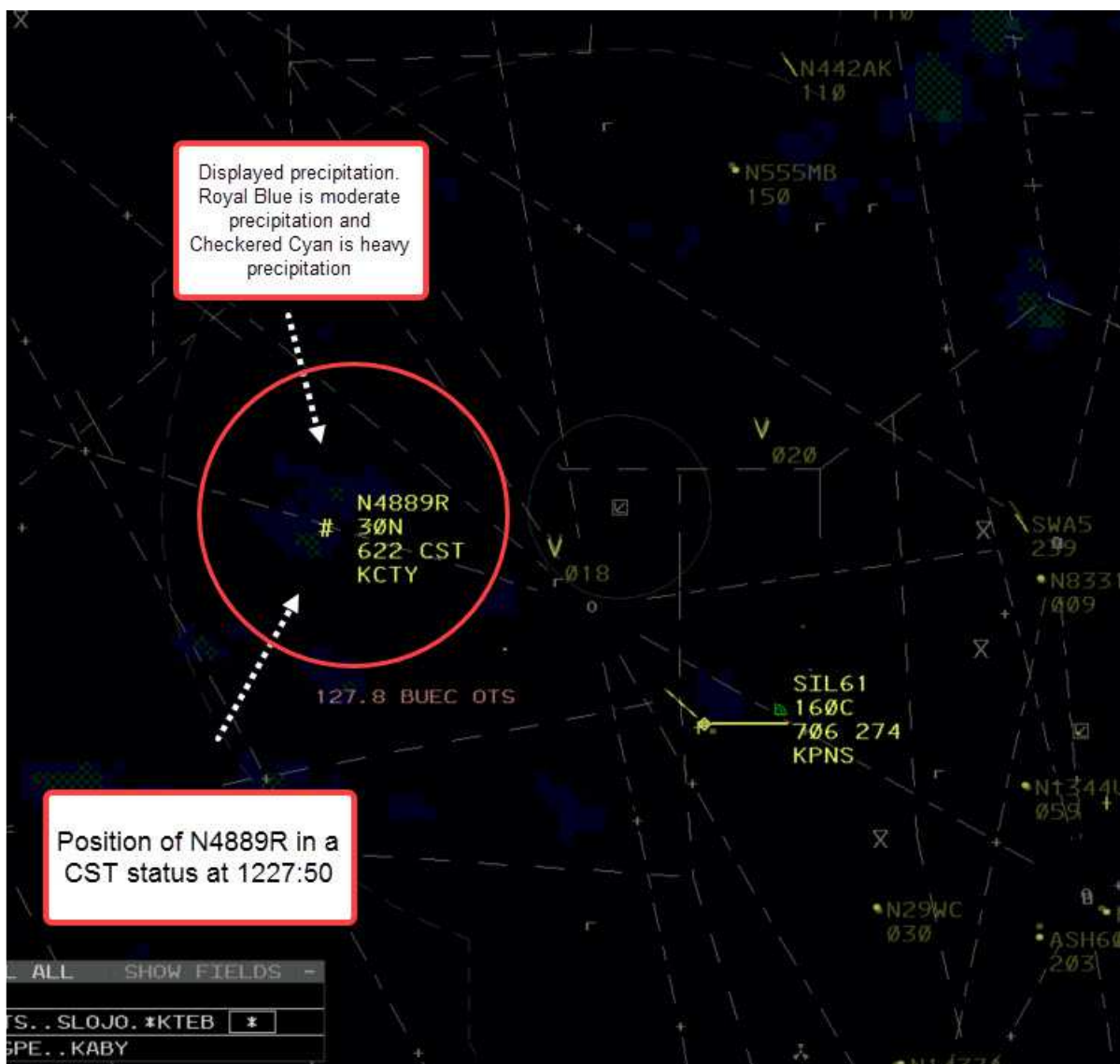


Figure 7 – Close-up of the ERAM TSD at 1227:50 showing the accident airplane in a Coast status and the displayed weather.

3.0 Weather Information

The accident occurred about 20 nautical miles west of CTY with no surface weather observation stations nearby. Figure 8 showed the Convective SIGMETs, AIRMETs, CWAs, and PIREPs, valid across the accident region at 1200 EDT with AIRMET Tango valid for moderate turbulence below 12,000 ft.

The National Weather Service (NWS) utilized the Tallahassee (KTLH) WSR-88D weather surveillance doppler radar for the detection of precipitation. The KTLH WSR-88D provides weather radar data as part of the Next Generation Weather Radar (NEXRAD) system; a network of over 150 doppler weather radars that produce a mosaic weather image. The NEXRAD data is imported into the FAA Weather and Radar Processor (WARP). The WARP system is an en route weather system that provides NEXRAD information to air traffic controllers via the Display

System Replacement (DSR)⁸ and provides meteorological products to the Center Weather Service Unit (CWSU) meteorologists and Traffic Management Specialists (TMU).

En route controllers have access to precipitation information provided to the DSR via the WARP using NEXRAD data. The precipitation display can show three levels of precipitation, moderate, heavy, and extreme. Royal blue represents moderate intensity (30-40 dBZ), checkered cyan represents heavy intensity (40-50 dBZ), and cyan represents extreme intensity (50+ dBZ).

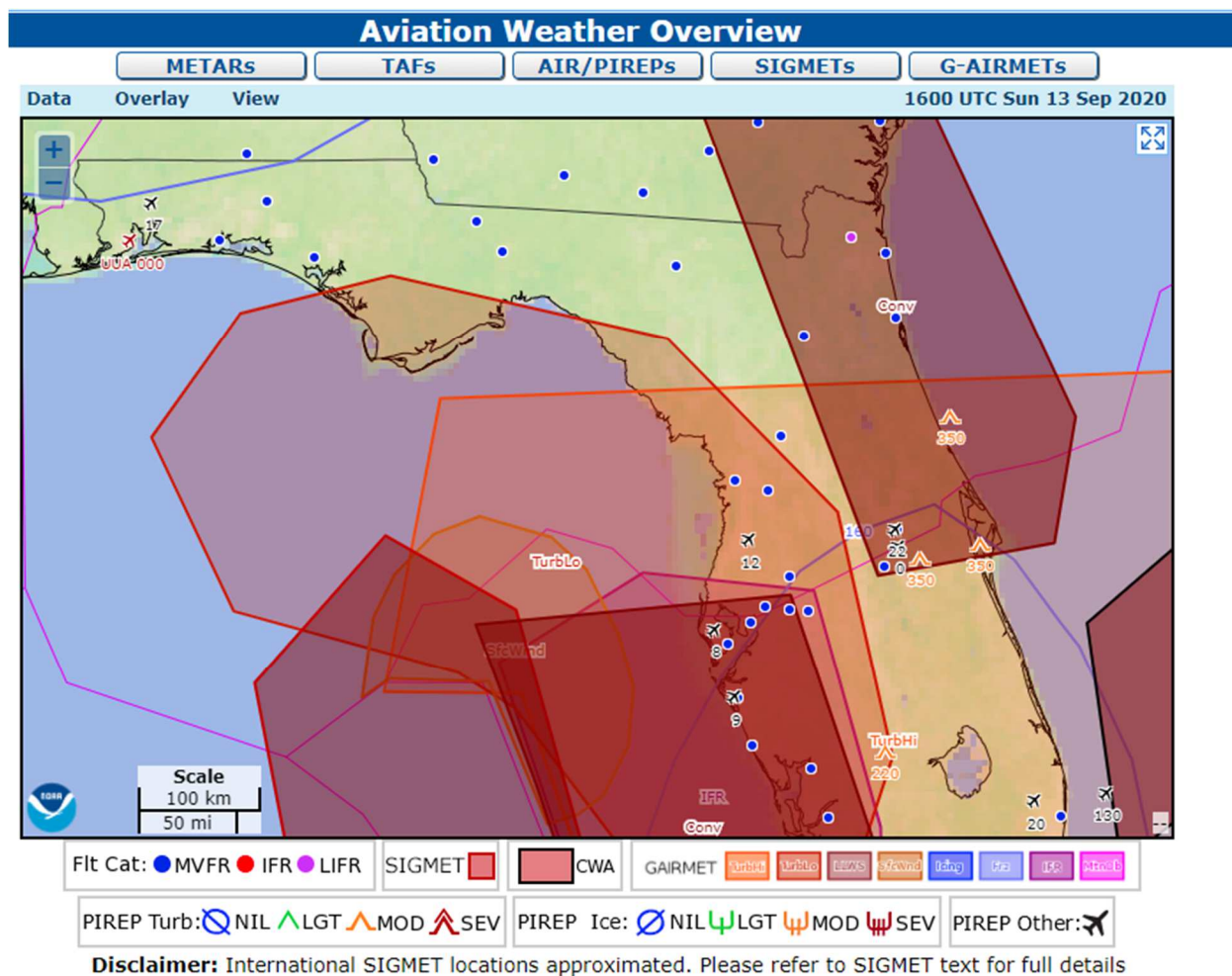
Figure 9 presents the KTLH WSR-88D base reflectivity image for the 0.5° elevation scan initiated at 1213:08 EDT, with a resolution of 0.5° X 250 m. Reflectivity values between 25 and 40 dBZ were located above the accident site at the accident time. The flight track for the last 5 minutes of flight is included as a pink line on figure 9.

Figure 10 presents the KTLH WSR-88D base reflectivity image for the 0.5° elevation scan initiated at 1218:10 EDT, with a resolution of 0.5° X 250 m. Reflectivity values between 35 and 45 dBZ were located above the accident site. The flight track is included as a pink line.

Figure 11 presents the KTLH WSR-88D base reflectivity image for the 0.5° elevation scan initiated at 1223:00 EDT, with a resolution of 0.5° X 250 m. Reflectivity values between 40 and 55 dBZ were located above the accident site. The flight track is included as a pink line.

Figure 12 presents the KTLH WSR-88D base reflectivity image for the 0.5° elevation scan initiated at 1227:49 EDT, with a resolution of 0.5° X 250 m. Reflectivity values between 35 and 45 dBZ were located along the accident flight track. The flight track is included as a pink line.

⁸ The display air traffic controllers utilize when working air traffic.



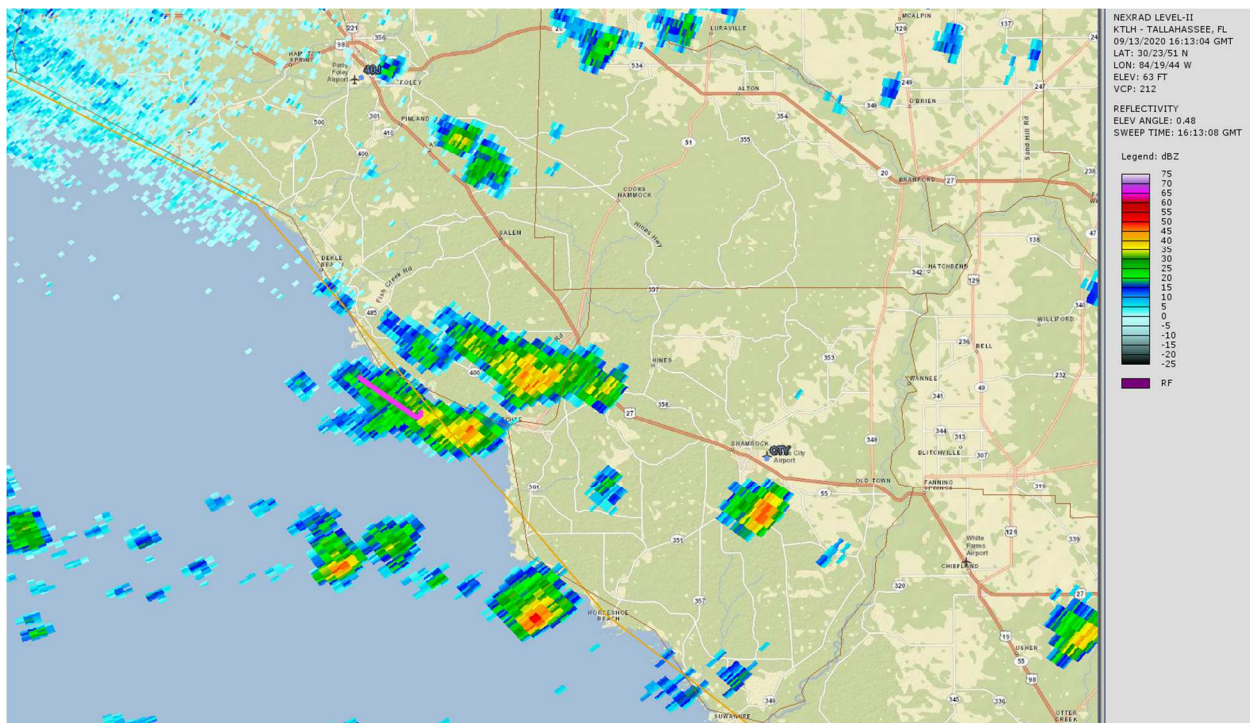


Figure 9 - WSR-88D imagery from 1613:08 UTC with flight track overlaid in pink.

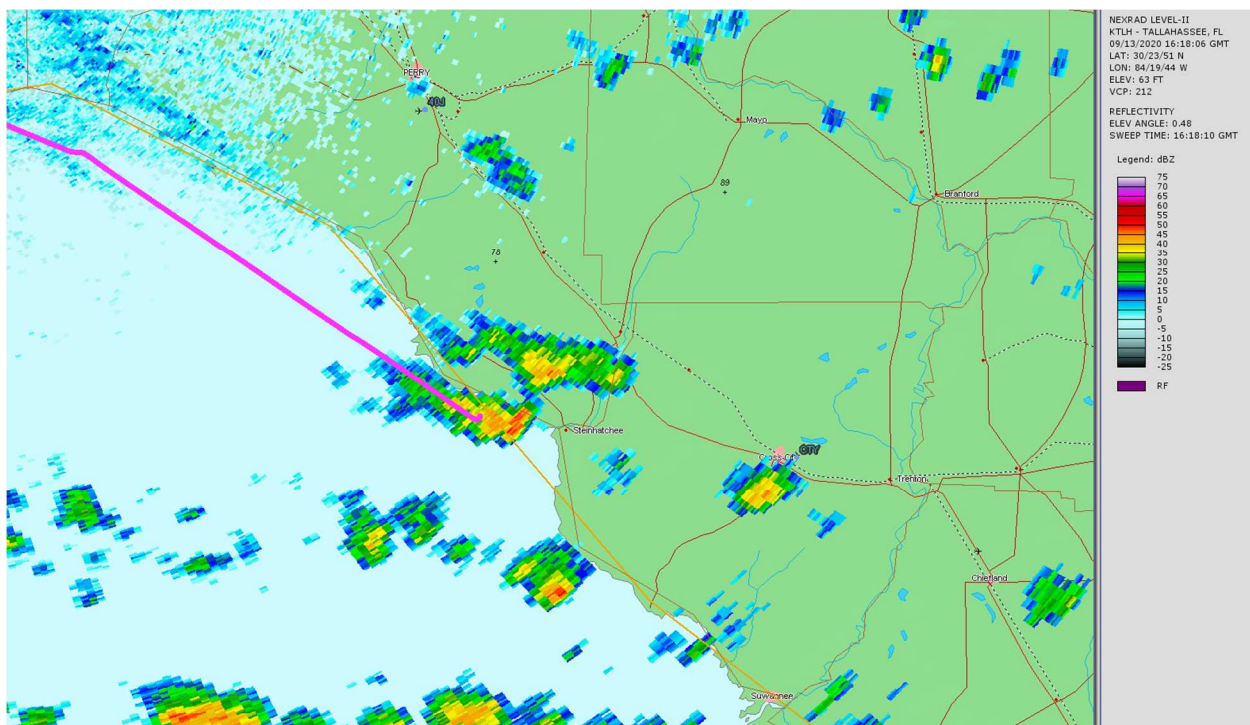


Figure 10 – WSR-88D imagery from 1618:10 UTC with flight track overlaid in pink.

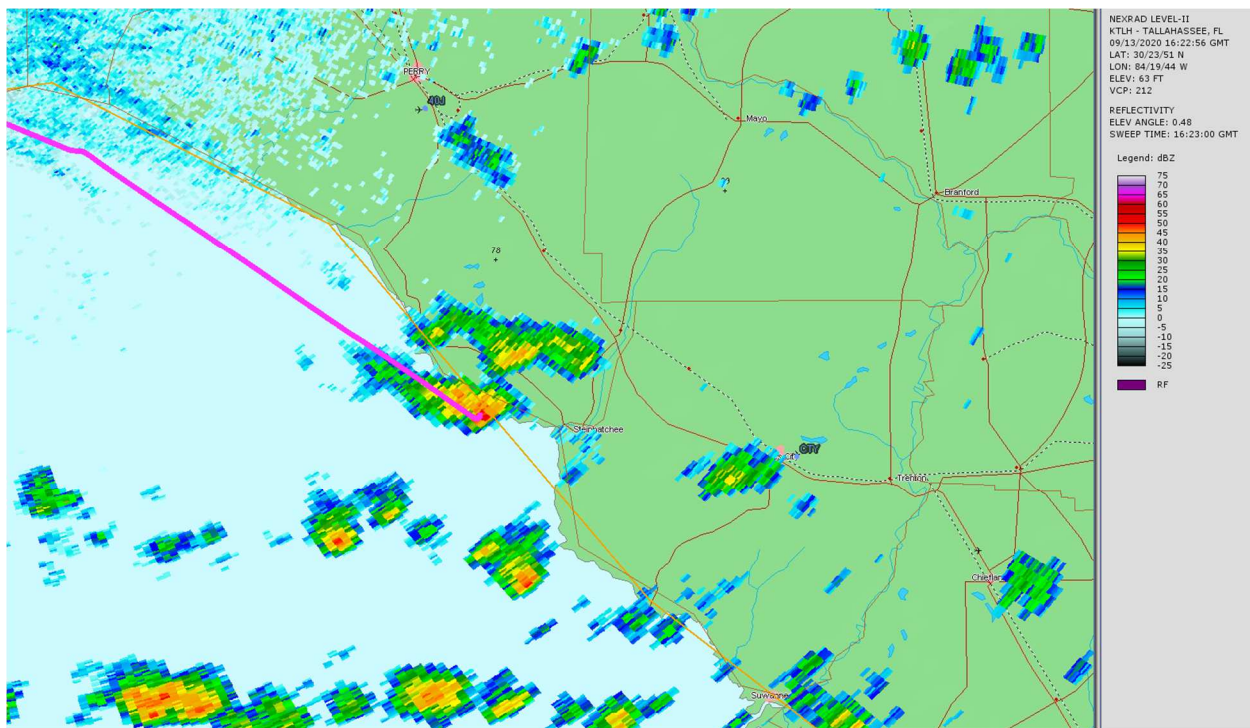


Figure 11 - WSR-88D imagery from 1623:00 UTC with flight track overlaid in pink.

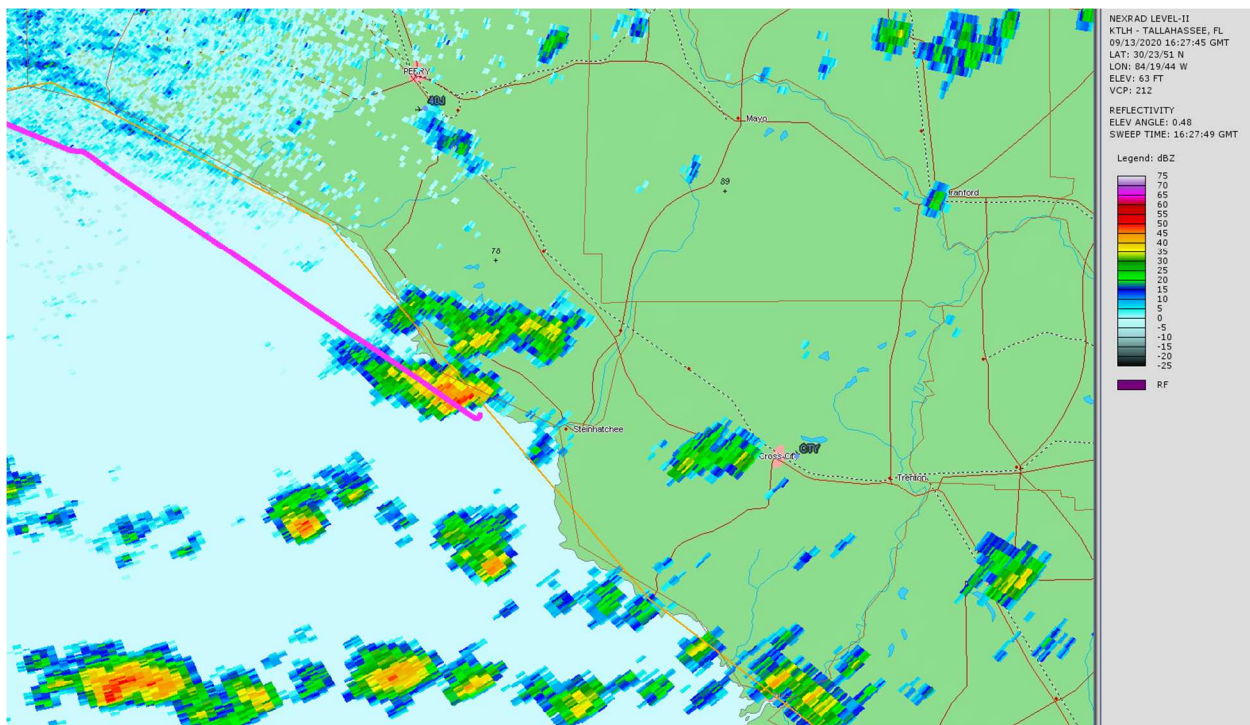


Figure 12 - WSR-88D imagery from 1627:49 UTC with flight track overlaid in pink.

4.0 CTY Area Navigation (RNAV) A Approach

At 1155:32, the sector 13 controller cleared the flight direct to the initial approach fix UGLUF. At 1204:03, the sector 13 controller instructed the pilot of N4889R to cross UGLUF at or above 3,000 ft and cleared the flight for the RNAV A approach into CTY. Figure 13 is an image of the RNAV (GPS)-A standard instrument approach procedure.

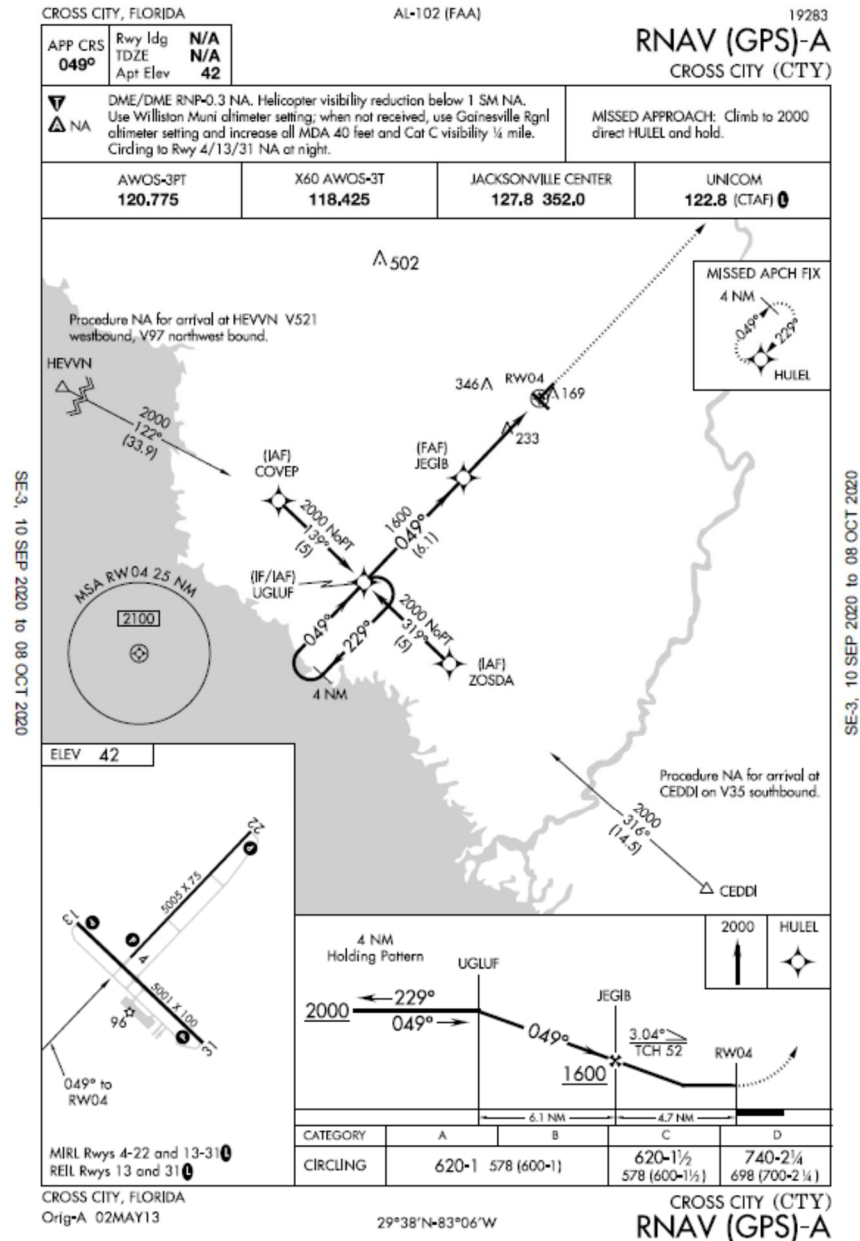


Figure 13 - Graphic showing the RNAV A GPS Approach into CTY.

5.0 Air Traffic Control Personnel

5.1 ZJX Acting Operations Manager

The ZJX Acting Operations Manager (AOM) began working for the FAA in April 2006 reporting to the FAA training facility in Oklahoma City, Oklahoma. After successfully completing the en route course in June 2006, he transferred to Jacksonville Air Route Traffic Control Center (ZJX). He reported to the West Area and was certified on all operating positions.

In February 2012, he became an Operations Supervisor (OS) for the West Area. In November 2018, he was detailed as the Executive Technical Representative (ETR) until January 2020 when he became an OS in the North Area. He was certified and maintained currency in the Brunswick, Allendale, and Jekyll sectors.

In March 2020 he was detailed as the AOM for a 180-day detail that ended on September 24, 2020. On September 25, 2020 he returned to duty as an OS in the North Area and has continued to maintain currency.

5.2 West Area Controller

The West Area controller began working for the FAA in January 2015 reporting to the FAA training facility in Oklahoma City, Oklahoma. After successfully completing the en route training course, she transferred to ZJX arriving in May 2015. She reported to the West Area, and successfully completed training to become certified on all operating positions.

Her previous ATC experience was with the United States Air Force (USAF). She joined the USAF in March 2008 and after completing basic training reported to Biloxi, Mississippi for air traffic control training. After completing training, she reported to Tyndall Air Force Base (PAM) for duty as an air traffic controller. After successfully completing position training, she became qualified on all radar positions at PAM. She maintained a class 2 physical with no restrictions. Post-accident toxicology screening was conducted with negative results.

5.3 West Area Controller in Charge (CIC)

The West Area CIC began working for the FAA in April 2003 reporting to the FAA training facility in Oklahoma City, Oklahoma. After successfully completing the en route course in July 2003, he transferred to ZJX. He reported to the West Area and was certified on all operating positions. He was designated as a CIC in 2006 or 2007, he was not certain.

The West Area CIC had no ATC experience prior to 2003; however, he was a certified pilot. He held ATP ratings in single engine aircraft, multi engine aircraft, and helicopters. He maintained instructor ratings as a commercial multi-engine instrument rating and was a certified flight instructor, certified flight instructor instrument, and helicopter instructor. He estimated he had about 4,200 hours total time. He maintained a class 2 physical with no restrictions.

He held several collateral duties in addition to being an air traffic controller. He was the vice president of the local union, he was the facility safety representative since 2007, facility ATSAP instructor, facility ADS-B representative, facility airspace representative and had been a member of the local safety council since its inception.

6.0 FAA Directives

6.1 FAA Order JO 7110.65Y, *Air Traffic Control*

This order prescribes air traffic control procedures and phraseology for use by personnel 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 not covered by it.

6.2 Purpose

Paragraph 2-1-1 of FAA Order JO 7110.65Y, *Air Traffic Control*, prescribes the purpose of the ATC system and addresses when the application of those services may be precluded and states [in part]:

2-1-1. ATC SERVICE

- a. The primary purpose of the ATC system is to prevent a collision involving aircraft operating in the system.
- b. In addition to its primary purpose, the ATC system also:
 1. Provides a safe, orderly, and expeditious flow of air traffic.
 2. Supports National Security and Homeland Defense missions.
- c. The ATC system must provide certain additional services to the extent permitted. The provision of additional services is not optional on the part of the controller, but rather required when the work situation permits. It is recognized that the provision of these services may be precluded by various factors, including, but not limited to:
 1. Volume of traffic.
 2. Frequency congestion.
 3. Quality of surveillance.
 4. Controller workload.
 5. Higher priority duties.
 6. The physical inability to scan and detect situations falling in this category.

6.3 Duty Priority

Paragraph 2-1-2 of FAA Order JO 7110.65Y, *Air Traffic Control*, prescribes the duty priority for air traffic controllers to apply when working air traffic within the National Airspace System (NAS) and states [in part]:

2-1-2. DUTY PRIORITY

- a. Give first priority to separating aircraft and issuing safety alerts as required in this order. Good judgment must be used in prioritizing all other provisions of this order based on the requirements of the situation at hand.
- c. Provide and/or solicit weather information in accordance with procedures and requirements outlined in this order

6.4 Familiarization

Paragraph 2-6-1 of FAA Order JO 7110.65Y, *Air Traffic Control*, prescribes the requirement for air traffic controllers to become familiar with pertinent weather and states [in part]:

2-6-1. FAMILIARIZATION

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.

6.5 PIREP Solicitation and Dissemination

Paragraph 2-6-1 of FAA Order JO 7110.65Y, *Air Traffic Control*, prescribes the requirement for air traffic controllers to solicit and disseminate PIREPs and states [in part]:

2-6-2. PIREP SOLICITATION AND DISSEMINATION

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.

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.
3. Thunderstorms and related phenomena.
4. Turbulence of moderate degree or greater.
5. Icing of light degree or greater.
6. Wind shear.
7. Braking action reports.
8. Volcanic ash clouds.
9. Detection of sulfur gases (SO₂ or H₂S), associated with volcanic activity, in the cabin.

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.

c. Obtain PIREPs directly from the pilot, or if the PIREP has been requested by another facility, you may instruct the pilot to deliver it directly to that facility.

6.6 Issuing Weather

Paragraph 2-6-4 of FAA order JO 7110.65Y, *Air Traffic Control*, prescribes the requirement for air traffic controllers to issue weather information and states [in part]:

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.
- f. *EN ROUTE*. When issuing Air Route Surveillance Radar (ARSR) precipitation intensity use the following:
 - 1. Describe the lowest displayable precipitation intensity as MODERATE.
 - 2. Describe the highest displayable precipitation intensity as HEAVY to EXTREME.

PHRASEOLOGY—

AREA OF (Intensity) PRECIPITATION BETWEEN (number) O’CLOCK and (number) O’CLOCK, (number) MILES, MOVING (direction) AT (number) KNOTS, TOPS (altitude). If applicable, AREA IS (number) MILES IN DIAMETER.

EXAMPLE—

- 1. *“Area of moderate precipitation between ten o’clock and one o’clock, three zero miles moving east at two zero knots, tops flight level three seven zero.*
- 2. *“Area of moderate precipitation between ten o’clock and three o’clock, two zero miles. Area is two five miles in diameter.”*

- g. Controllers must ensure that the highest available level of precipitation intensity within their area of jurisdiction is displayed unless operational/ equipment limitations exist.
- 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.
 - 1. An approval for lateral deviation authorizes the pilot to maneuver left or right within the limits of the lateral deviation area.
 - 2. When approving a weather deviation for an aircraft that had previously been issued a crossing altitude, including climb via or descend via clearances, issue an

altitude to maintain along with the clearance to deviate. If you intend on clearing the aircraft to resume the procedure, advise the pilot.

F. LIST OF ATTACHMENTS

Attachment 1: Interview Summaries

Submitted by:

Andy Olvis
Senior Air Safety Investigator