

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



CEN23FA283

METEOROLOGY

Specialist's Factual Report

September 22, 2023

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A. ACCIDENT

Location: Rayville, Louisiana
Date: July 7, 2023
Time: 0023 central daylight time
0523 coordinated universal time (UTC)
Airplane: Beech A36; Registration: N15RP

B. METEOROLOGY SPECIALIST

Paul Suffern
National Transportation Safety Board
Washington, DC

C. DETAILS OF THE INVESTIGATION

The NTSB's Senior Meteorologist did not travel for this investigation but gathered all data remotely. Data for this investigation were collected from official National Oceanic and Atmospheric Administration (NOAA) National Weather Service (NWS) sources including the Weather Prediction Center (WPC) and the National Center for Environmental Information (NCEI). This Specialist's Factual Report contains the meteorological factors pertinent to the weather surrounding the accident time. All times are central daylight time (CDT) and are based upon the 24-hour clock, where local time is -5 hours from UTC. Directions are referenced to true north and distances are in nautical miles. Heights are above mean sea level (msl) unless otherwise noted. Visibility is in statute miles and fractions of statute miles. NWS station identifiers use the standard International Civil Aviation Organization 4-letter station identifiers versus the International Air Transport Association 3-letter identifiers, which deletes the initial country code designator "K" for U.S. airports.

The accident site was located at approximate latitude 32.4647° N, longitude 91.7877° W, and elevation of 90 feet (ft).

D. FACTUAL INFORMATION

1.0 Synoptic Situation

The synoptic or large-scale migratory weather systems influencing the area were documented using standard NWS charts issued by the National Center for Environmental Prediction and the WPC, located in College Park, Maryland. These are the base products used in describing synoptic weather features and in the creation of forecasts and warnings for the NWS. Reference to these charts can be found in the Federal Aviation Administration (FAA) "Aviation Weather Handbook", FAA-H-8083-28.¹

1.1 Surface Analysis Chart

The NWS Surface Analysis Chart centered over the southern United States for 0100 CDT is provided as figure 1 with the accident site within the black circle. The chart depicted a low-pressure system at 1013-hectopascals (hPa) located in western Tennessee with a cold front stretched southwest through Mississippi into southern Arkansas and westward into northern Texas. A high-pressure system was located in southern Louisiana with a pressure of 1017-hPa. The accident site was located south of the cold front on the warmer side of the front.

The station models closest to the accident site depicted air temperatures of 72 to 74 degrees Fahrenheit (°F), dew point temperatures of 71 to 73°F, clear skies, with calm to light and variable winds of 5 knots or less.

¹ [FAA-H-8083-28](#)

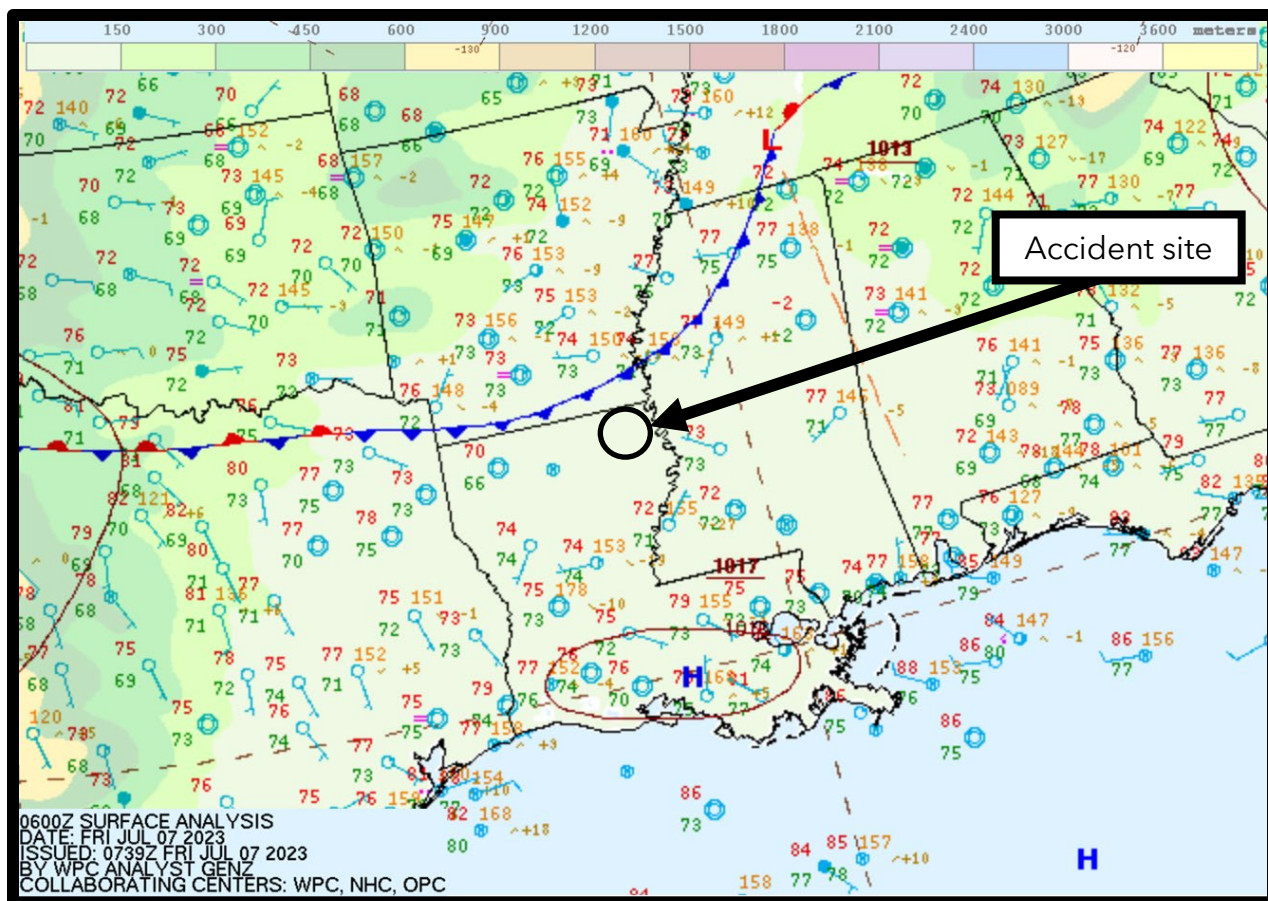


Figure 1. NWS Surface Analysis Chart for 0100 CDT.

1.2 Upper Air Charts

The NWS Storm Prediction Center (SPC) Constant Pressure Charts for 0700 CDT at 925-, 850-, and 700-hPa are presented in figures 2 through 4. The charts indicated that the accident site was located northwest of the low- and mid-level high-pressure system in the northern Gulf of Mexico. The 925-hPa constant pressure chart depicted a northwest wind around 10 knots (figure 2) becoming a 5 knot west wind by 700-hPa (figure 4).

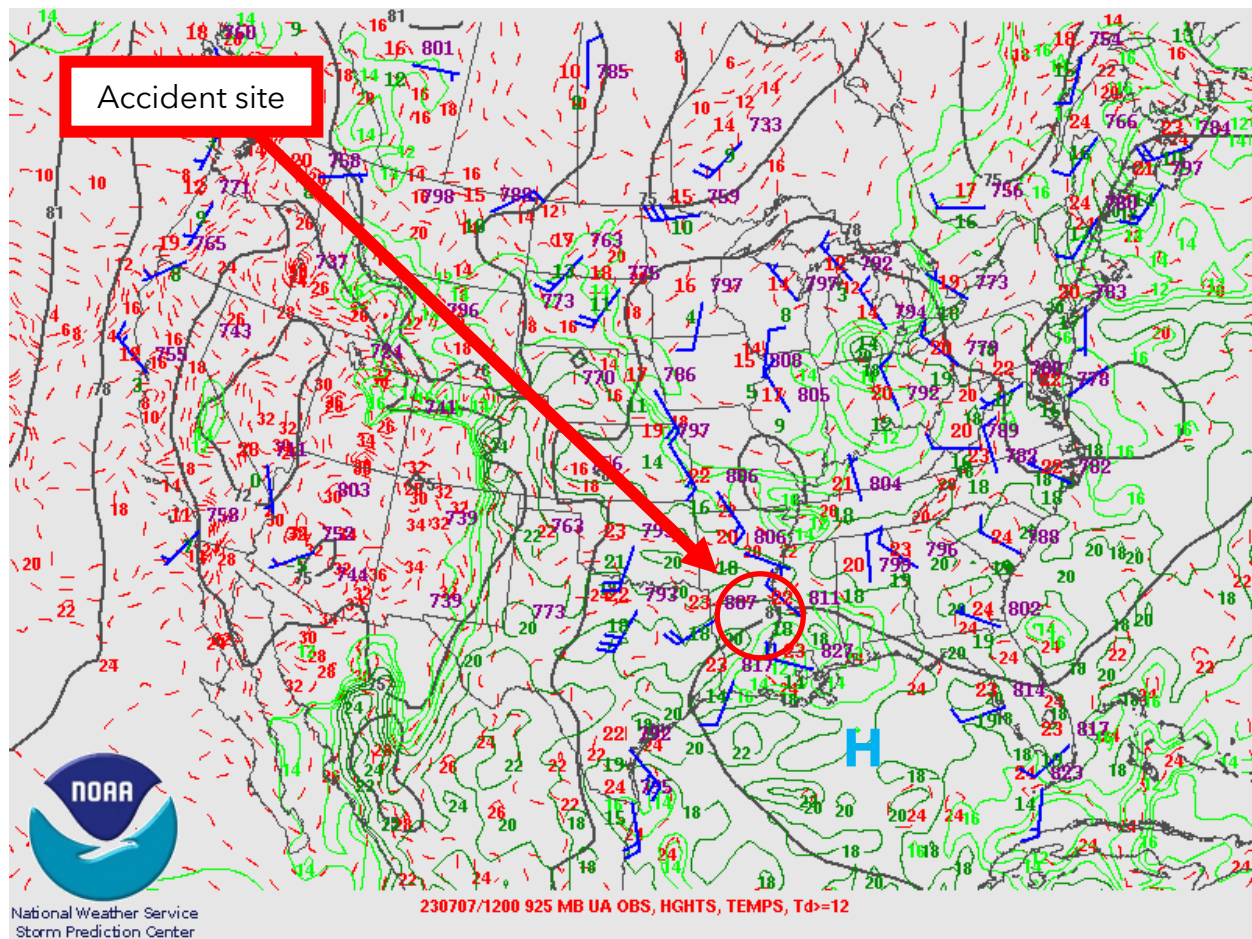


Figure 2. 925-hPa Constant Pressure Chart for 0700 CDT.

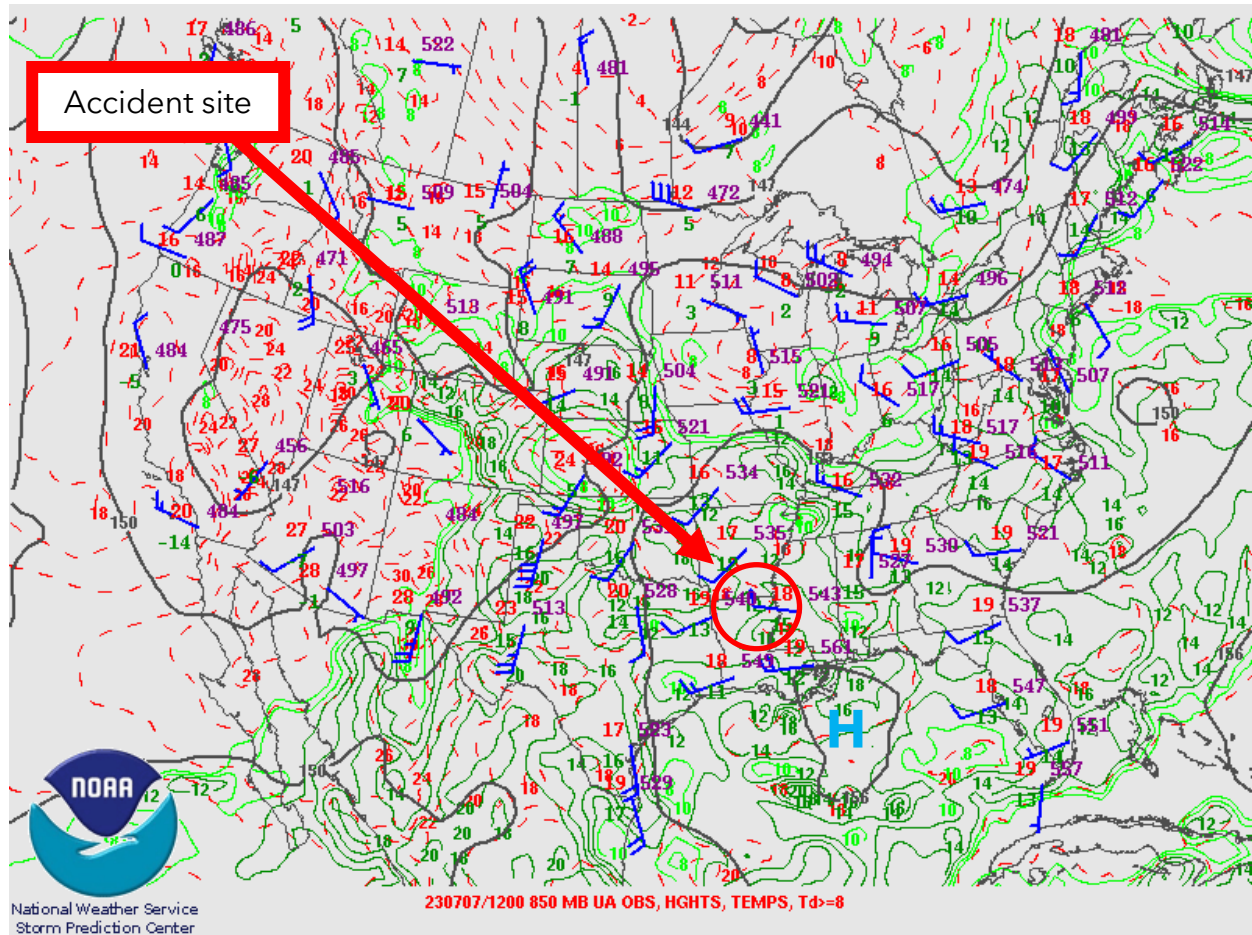


Figure 3. 850-hPa Constant Pressure Chart for 0700 CDT.

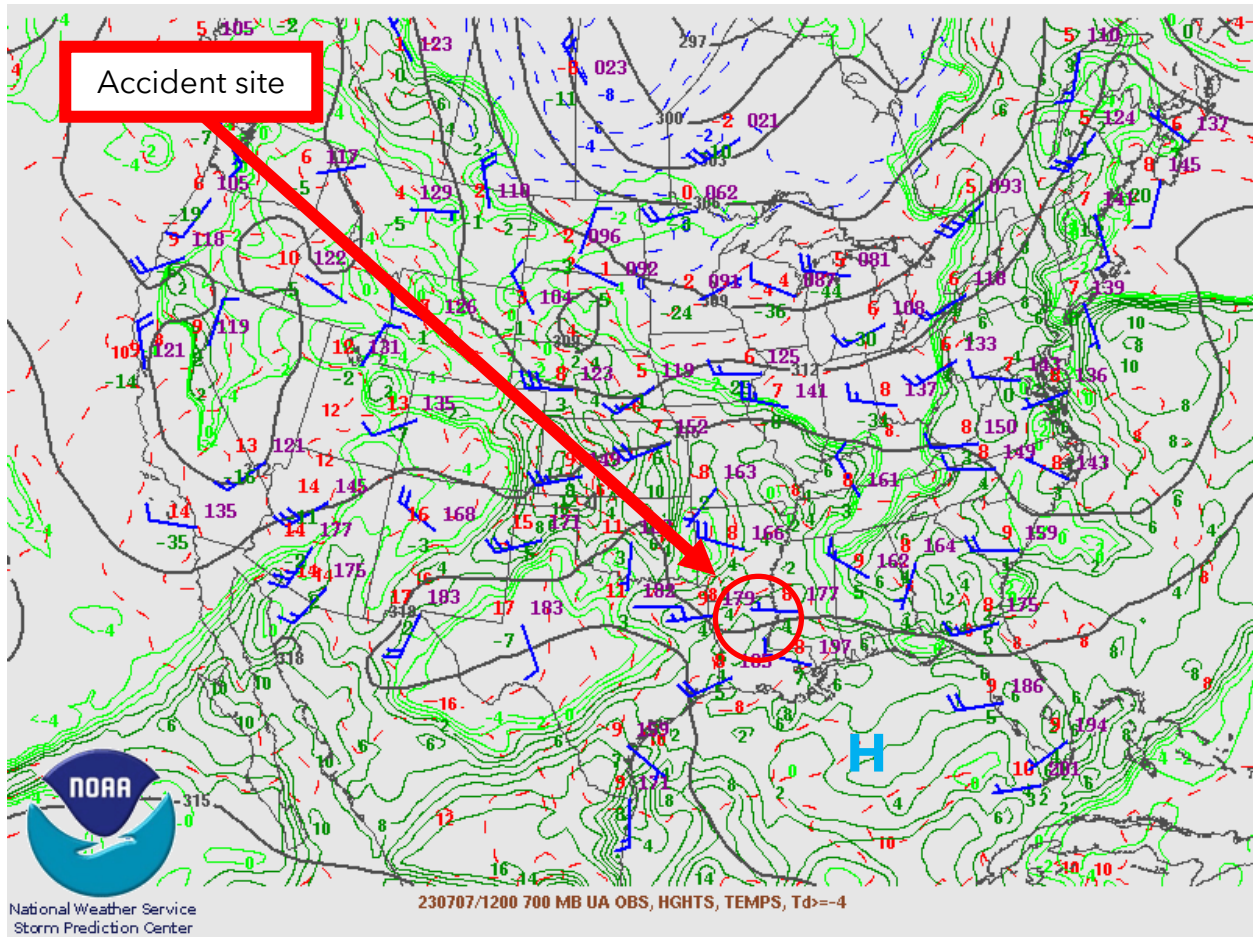


Figure 4. 700-hPa Constant Pressure Chart for 0700 CDT.

2.0 Storm Prediction Center Convective Outlook

The SPC issued a Day 1 Convective Outlook at 1943 CDT on July 6 (figure 5) with areas of general thunderstorms forecast for the accident site. The SPC defines the “TSTM” area as an area where a 10% or higher probability of thunderstorms is forecast during the valid period.

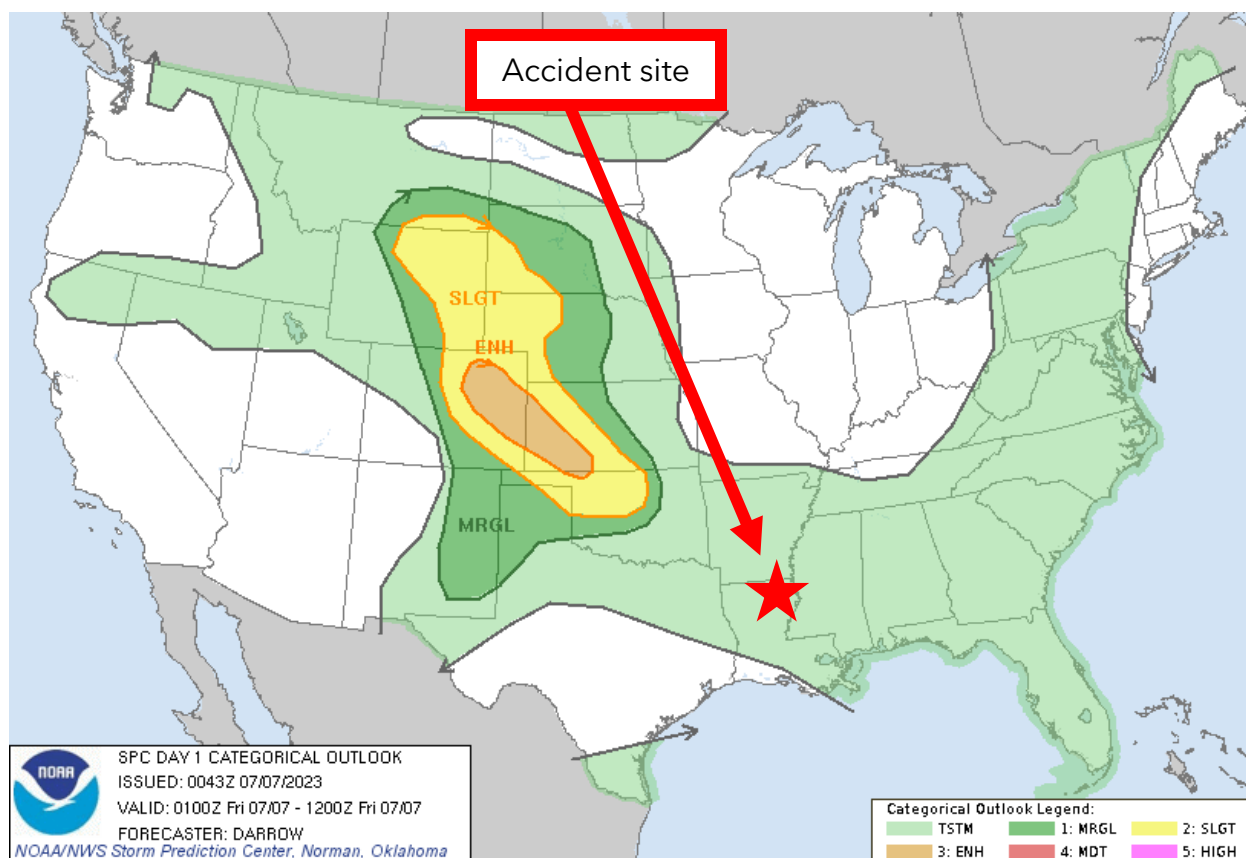


Figure 5. SPC day 1 Convective Outlook valid at the time of the accident.

3.0 Surface Observations

The area surrounding the accident site was documented using official Aviation Routine Weather Reports (METARs) and Special Reports (SPECIs)². The following observations were taken from standard code and those made around the accident time are provided in plain language. Figure 6 is a local sectional chart with the accident site and the closest weather reporting locations marked. A magnetic variation³ of 0° was indicated over the area.

² Latest criteria for SPECIs can be found in the Federal Meteorological Handbook: [Federal Meteorological Handbook Number 1, Surface Weather Observations and Reports \(icams-portal.gov\)](https://www.federalmeteorologicalhandbook.com/)

³ Magnetic variation - The angle (at a particular location) between magnetic north and true north. Latest measurement taken from <https://skyvector.com/>

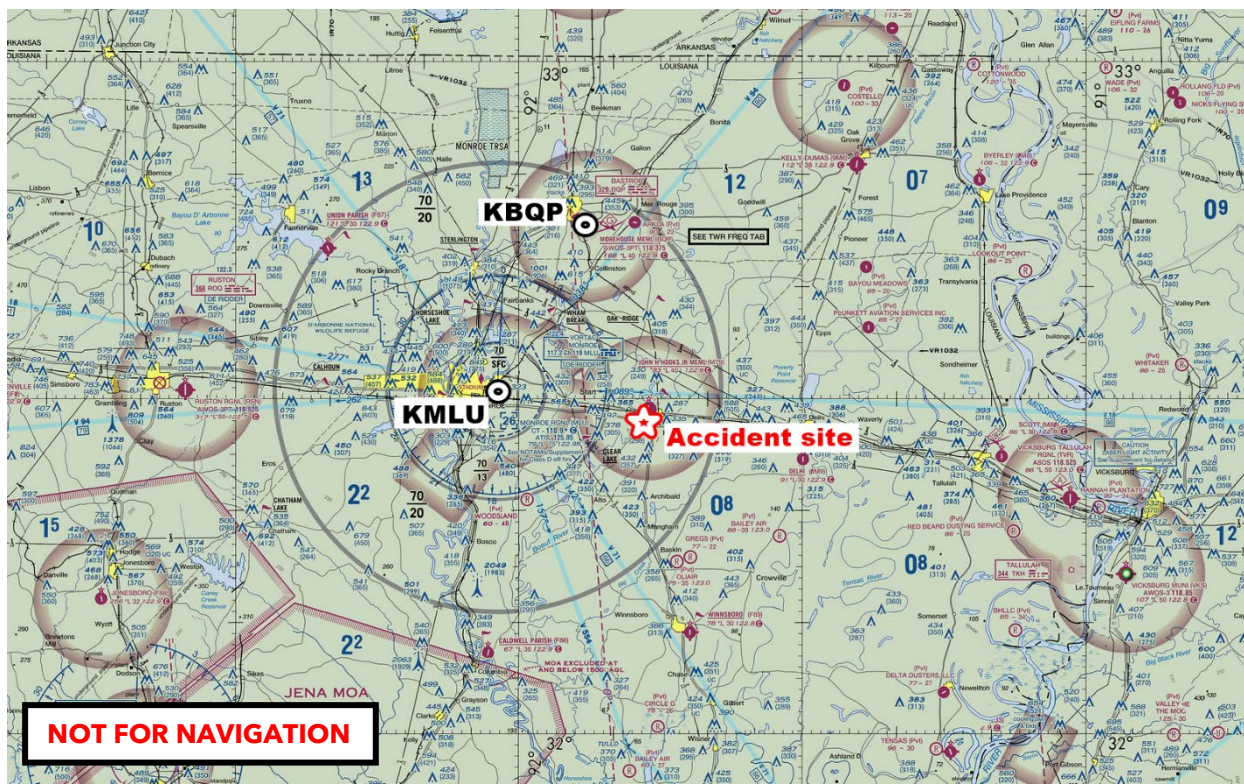


Figure 6. FAA sectional aeronautical chart of the accident area with the location of the accident site and surface observation sites noted.

Monroe Regional Airport (KMLU) had the closest official weather station to the accident site. KMLU had an Automated Surface Observing System (ASOS⁴) and its longline⁵ reports were augmented when the air traffic control tower (ATC) was in operation⁶. The KMLU ASOS was located 13 miles west of the accident site (figure 6), at an elevation of 79 ft, and issued the following observations surrounding the accident time:⁷

⁴ ASOS - Automated Surface Observing System is equipped with meteorological instruments to observe and report wind, visibility, weather phenomena, ceiling, temperature, dewpoint, altimeter, and barometric pressure. ASOS are maintained by the NWS.

⁵ "Longline" refers to the dissemination of weather observations with the intent that they are available in near-real time to national databases 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 weather observations are distributed.

⁶ ATC hours of operation 0600 to 2200 local time.

⁷ The bold sections of products in this report are intended to highlight the text that directly reference the weather conditions that affected the accident region around the accident time. The local times in this section next to the METARs are provided for quick reference between UTC and local times.

[2028 CDT on July 6] SPECI KMLU 070128Z 20009KT 10SM FEW009
24/22 A3002 RMK AO2 LTG DSNT SW T02390222=

[2053 CDT on July 6] METAR KMLU 070153Z 19005KT 10SM FEW012
BKN100 24/22 A3003 RMK AO2 LTG DSNT S-W SLP166 T02390222=

[2153 CDT on July 6] METAR KMLU 070253Z 20005KT 9SM -RA
FEW110 24/23 A3003 RMK AO2 LTG DSNT S AND SW RAB20 SLP166
P0001 60001 T02390228 53016=

[2253 CDT on July 6] METAR KMLU 070353Z AUTO 15003KT 10SM
CLR 24/23 A3001 RMK AO2 RAE23 SLP161 P0000 T02390228=

**[2353 CDT on July 6] METAR KMLU 070453Z AUTO 00000KT 10SM
CLR 24/23 A3000 RMK AO2 SLP157 T02390228=**

ACCIDENT TIME 0023 CDT

**[0053 CDT] METAR KMLU 070553Z AUTO 10003KT 10SM CLR
24/23 A2999 RMK AO2 SLP154 60001 T02390228 10244 20233
403500228 56012=**

**[0116 CDT] SPECI KMLU 070616Z AUTO 00000KT 4SM BR SCT002
23/22 A2998 RMK AO2 T02330222=**

[0120 CDT] SPECI KMLU 070620Z AUTO 09004KT 2 1/2SM BR BKN002
23/22 A2998 RMK AO2 T02330222=

[0127 CDT] SPECI KMLU 070627Z AUTO 06004KT 3/4SM BR VV002
24/23 A2998 RMK AO2 T02390228=

The bold type observations decoded in plain language were as follows:

KMLU weather at 2353 CDT on July 6, automated, wind calm, visibility 10 miles or greater, clear skies below 12,000 ft above ground level (agl), temperature of 24° Celsius (C), dew point temperature of 23°C, and an altimeter setting of 30.00 inches of mercury (inHg). Remarks, automated station with a precipitation discriminator, sea level pressure 1015.7 hPa, temperature 23.9°C, dew point temperature 22.8°C.

KMLU weather at 0053 CDT, automated, wind from 100° at 3 knots, visibility 10 miles or greater, clear skies below 12,000 ft agl, temperature of 24°C, dew point temperature of 23°C, and an altimeter setting of 29.99 inHg. Remarks, automated station with a precipitation discriminator, sea level pressure 1015.4 hPa, 6-hourly precipitation of 0.01 inches, temperature 23.9°C, dew point temperature 22.8°C, 6-hourly maximum temperature of 24.4°C, 6-hourly minimum temperature of 23.3°C, daily maximum temperature of 35.0°C, daily minimum temperature of 22.8°C, 3-hourly pressure decrease of 1.2 hPa.

KMLU weather at 0116 CDT, automated, wind calm, visibility 4 miles, mist, scattered clouds at 200 ft agl, temperature of 23°C, dew point temperature of 22°C, and an altimeter setting of 29.98 inHg. Remarks, automated station with a precipitation discriminator, temperature 23.3°C, dew point temperature 22.2°C.

Morehouse Memorial Airport (KBQP) had the second closest official weather station to the accident site. KBQP had an Automated Weather Observing System (AWOS⁸) and its longline reports were not augmented. The KBQP AWOS was located 18 miles north-northwest of the accident site (figure 6), at an elevation of 168 ft, and issued the following observations surrounding the accident time:

[2255 CDT on July 6] METAR KBQP 070355Z AUTO 00000KT 10SM CLR
23/23 A3003 RMK AO2 T02300226=

[2315 CDT on July 6] METAR KBQP 070415Z AUTO 00000KT 7SM CLR
23/22 A3003 RMK AO2 T02270223=

[2335 CDT on July 6] METAR KBQP 070435Z AUTO 00000KT 10SM
BKN060 23/23 A3002 RMK AO2 T02270225=

[2355 CDT on July 6] METAR KBQP 070455Z AUTO 08003KT 10SM
SCT060 23/22 A3000 RMK AO2 T02260223=

**[0015 CDT] METAR KBQP 070515Z AUTO 00000KT 10SM CLR
23/22 A3001 RMK AO2 T02260223=**

ACCIDENT TIME 0023 CDT

**[0035 CDT] METAR KBQP 070535Z AUTO 00000KT 10SM SCT002
SCT060 23/22 A3001 RMK AO2 T02260223=**

⁸ AWOS - Automated Weather Observing System is equipped with meteorological instruments to typically observe and report temperature, dewpoint, wind speed and direction, visibility, cloud coverage and ceiling up to 12,000 feet, and altimeter setting. AWOS are maintained by the FAA. Certain AWOS may have different reporting or observational equipment.

[0055 CDT] METAR KBQP 070555Z AUTO 00000KT 7SM SCT002
SCT060 23/22 A3000 RMK AO2 60001 T02250221 10232 20225
403310225=

The bold type observations decoded in plain language were as follows:

KBQP weather at 0015 CDT, automated, wind calm, visibility 10 miles or greater, clear skies below 12,000 ft agl, temperature of 23°C, dew point temperature of 22°C, and an altimeter setting of 30.01 inHg. Remarks, automated station with a precipitation discriminator, temperature 22.6°C, dew point temperature 22.3°C.

KBQP weather at 0035 CDT, automated, wind calm, visibility 10 miles or greater, scattered clouds at 200 ft agl, scattered clouds at 6,000 ft agl, temperature of 23°C, dew point temperature of 22°C, and an altimeter setting of 30.01 inHg. Remarks, automated station with a precipitation discriminator, temperature 22.6°C, dew point temperature 22.3°C.

The observations from the KMLU and KBQP around the accident time identified VFR⁹ conditions. LIFR conditions arrived at KMLU shortly after 0100 CDT with an east wind below 5 knots.

⁹ The NWS and the FAA Aeronautical Information Manual (AIM) section 7-1-7 defines the following general flight categories:

- Low Instrument Flight Rules (LIFR*) – ceiling below 500 ft above ground level (agl) and/or visibility less than 1 statute mile.
- Instrument Flight Rules (IFR) – ceiling between 500 to below 1,000 feet agl and/or visibility 1 to less than 3 miles.
- Marginal Visual Flight Rules (MVFR**) – ceiling from 1,000 to 3,000 ft agl and/or visibility 3 to 5 miles.
- Visual Flight Rules (VFR) – ceiling greater 3,000 ft agl and visibility greater than 5 miles.

* By definition, IFR is a ceiling less than 1,000 ft agl and/or visibility less than 3 miles while LIFR is a sub-category of IFR.

**By definition, VFR is a ceiling greater than or equal to 3,000 ft agl and visibility greater than 5 miles while MVFR is a sub-category of VFR.

4.0 Upper Air Sounding

A High-Resolution Rapid Refresh (HRRR)¹⁰ model sounding was created¹¹ for the approximate accident site coordinates for 0000 CDT. The HRRR sounding was plotted on a standard Skew-T Log P diagram¹² from the surface to 700-hPa (or approximately 10,000 ft) using the RAOB¹³ software package and is included as figure 7. The sounding depicted an elevation of 105 ft over the grid point with a near surface temperature of 23.1°C, a dew point temperature of 22.0°C, and a relative humidity of 94%. The sounding depicted the lifted condensation level (LCL)¹⁴ at 468 ft agl (573 ft msl), the convective condensation level (CCL)¹⁵ at 6,610 ft msl, and the level of free convection (LFC)¹⁶ at 10,075 ft msl. The freezing level was located at 15,641 ft. The precipitable water value at 2.11 inches.

¹⁰ The HRRR is a NOAA real-time three-kilometer resolution, hourly-updated, cloud-resolving, convection-allowing atmospheric model, initialized by three-kilometer grids with three-kilometer radar assimilation. Radar data is assimilated in the HRRR every 15 minutes over a one-hour period.

¹¹ HRRR sounding was created using NOAA Air Resource Laboratory: [READY Archived Meteorology \(noaa.gov\)](https://ready.arl.noaa.gov/).

¹² Skew T log P diagram – is a standard meteorological plot using temperature and the logarithmic of pressure as coordinates, used to display winds, temperature, dew point, and various indices used to define the vertical structure of the atmosphere.

¹³ RAOB – (The complete Rawinsonde Observation program) is an interactive sounding analysis program developed by Esonde Research Services, The Villages, Florida.

¹⁴ LCL – The height at which a parcel of moist air becomes saturated when it is lifted dry adiabatically.

¹⁵ CCL – The level in the atmosphere to which an air parcel, if heated from below, will rise dry adiabatically, without becoming colder than its environment just before the parcel becomes saturated.

¹⁶ LFC – The level at which a parcel of saturated air becomes warmer than the surrounding air and begins to rise freely. This occurs most readily in a conditionally unstable atmosphere.

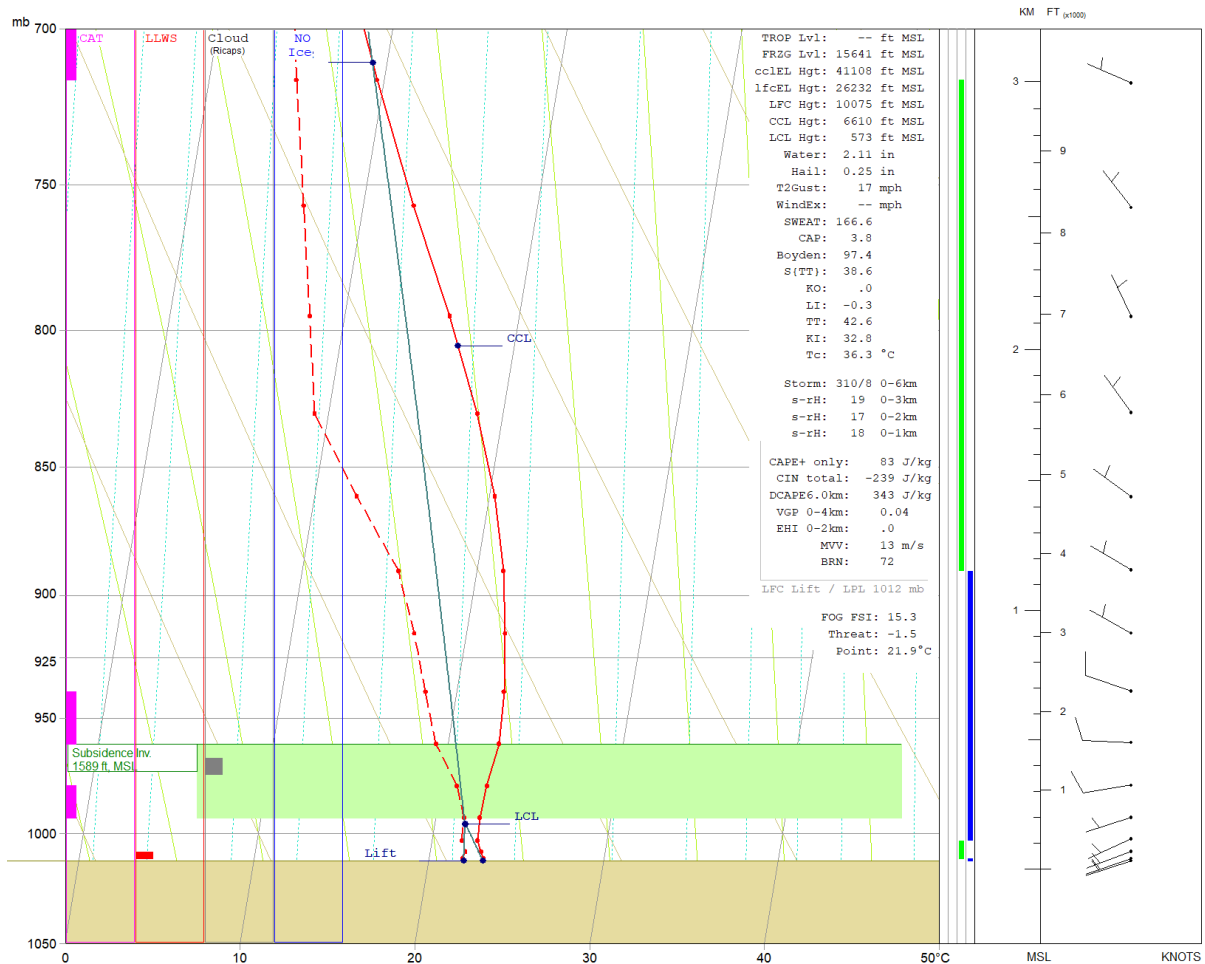


Figure 7. 0000 CDT HRRR sounding.

The 0000 CDT HRRR sounding indicated a conditionally unstable environment from the surface through 200 ft agl then a stable environment from 200 ft agl through 4,000 ft. RAOB indicated a cloud layer between 1,000 and 1,400 ft agl. No icing was indicated below 10,000 ft. The top of a subsidence inversion¹⁷ was noted at 1,589 ft.

The 0000 CDT HRRR sounding wind profile indicated a near-surface wind from 251° at 3 knots with the wind remaining out of the west to northwest under 11 knots through 10,000 ft. RAOB indicated the possibility of very light low-level wind shear (LLWS) between the surface and 200 ft agl. RAOB also indicated light clear air turbulence (CAT) in two layers between 750 ft and 2,500 ft agl.

¹⁷ Inversion - A departure from the usual decrease of the value of an atmospheric property with increasing altitude; also, the layer through which this departure occurs (the "inversion layer"), or the lowest altitude at which the departure is found (the "base of the inversion").

5.0 Satellite Data

Geostationary Operational Environmental Satellite number 16 (GOES-16) visible and infrared data were obtained from an archive at the Space Science Engineering Center at the University of Wisconsin-Madison in Madison, Wisconsin, and processed using the Man-computer Interactive Data Access System software. Visible and infrared imagery (GOES-16 bands 2 and 13) at wavelengths of 0.64 microns (μm) and 10.3 μm , respectively, were retrieved for the period from 2000 CDT on July 6 through 0600 CDT on July 7 and reviewed, and the closest images to the time of the accident were documented. Given the sun angle, the visible imagery (band 2) did not provide useful information at the accident time.

Figure 8 presents the GOES-16 infrared image at 0026 CDT at 8X magnification with the accident site highlighted with a red square. The lower brightness temperatures (yellow and green colors; higher cloud tops) were located northeast through southwest of the accident site at the accident time. The brightness temperature of 281 Kelvin above the accident site would have been near 10,000 ft based on the vertical temperature profile provided by the 0000 CDT HRRR sounding. It should be noted these figures have not been corrected for any parallax error. The Nighttime Microphysics Red, Green, Blue (RGB) imagery¹⁸ indicated the cloud cover above the accident site was a combination of low- and very low-level water clouds with the cloud cover expanding in areal coverage with time (attachment 1). The mid-level water and ice clouds, and higher thick clouds had moved east of the accident site by the accident time.

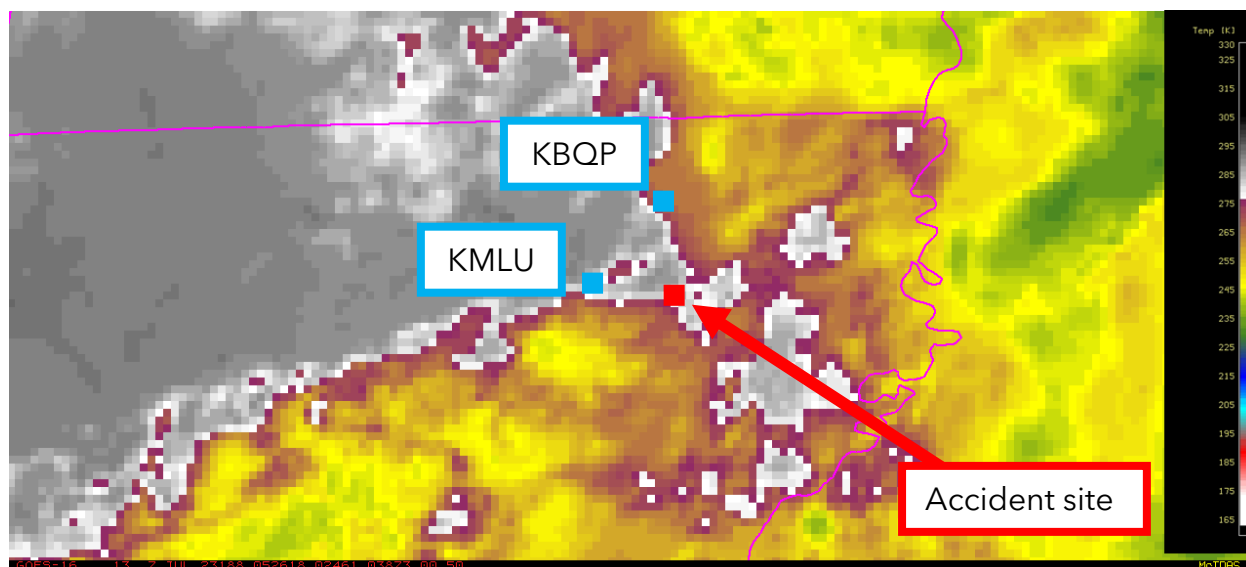


Figure 8. GOES-16 infrared image at 0026 CDT.

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https://weather.msfc.nasa.gov/sport/training/quickGuides/rgb/QuickGuide_NtMicro_GOESR_NASA_SPoRT_20191206.pdf

6.0 National Radar Imagery

A regional view of the NWS National Reflectivity Mosaic is included as figure 9 for 0025 CDT with the approximate location of the accident site marked by a red circle. The image depicted no echoes above the accident site.

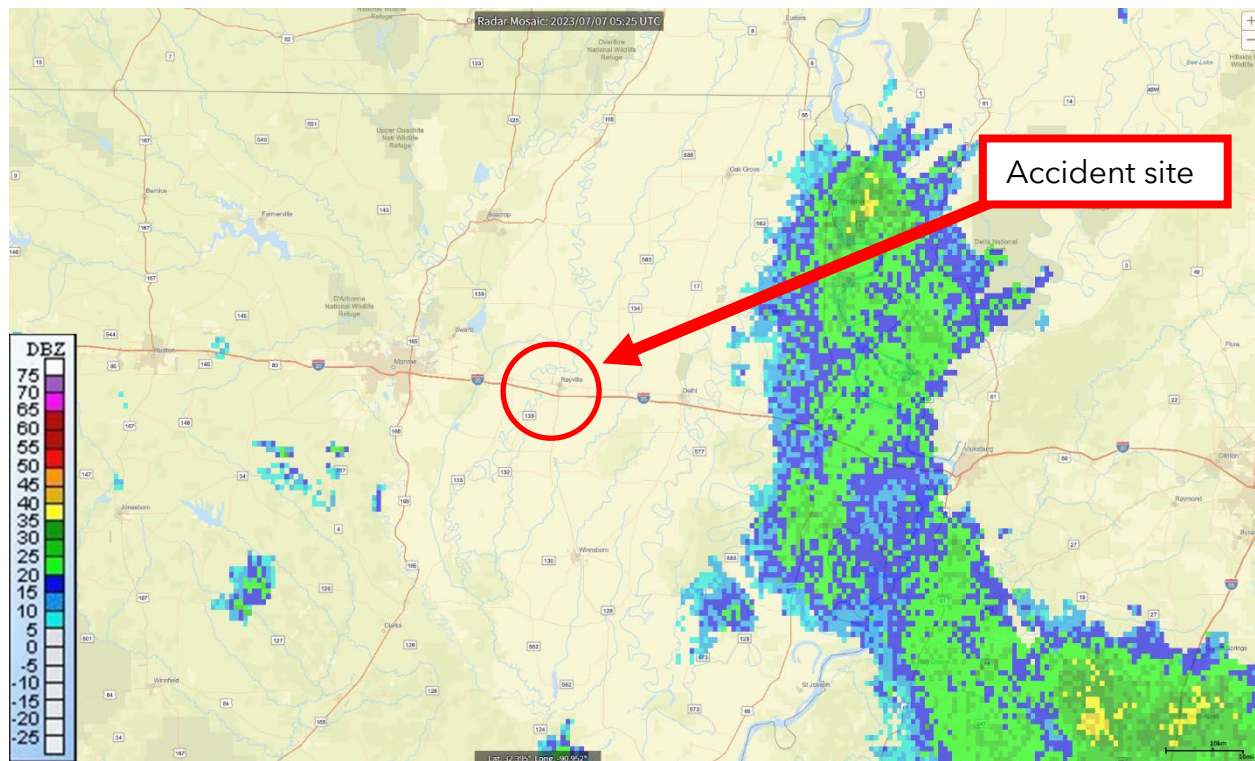


Figure 9. National Reflectivity Mosaic for 0025 CDT.

7.0 Pilot Reports

There were no longline-disseminated pilot reports¹⁹ (PIREPs) distributed into the national airspace system (NAS) within 2 hours before and after the accident time and within 100 miles of the accident site at altitudes below 18,000 ft.

8.0 Significant Meteorological Information

There were no convective or non-convective Significant Meteorological Information (SIGMET) advisories valid for the accident site at the accident time.

¹⁹ Only PIREPs with the World Meteorological Organization headers UBLA**, UBTX**, UBOK**, UBAR**, and UBMS** were considered. These do not include pilot reports only broadcast via radio.

9.0 Center Weather Service Advisories

The Fort Worth (ZFW) Air Route Traffic Control Center (ARTCC) Center Weather Service Unit (CWSU) was responsible for the accident region. There was no Center Weather Advisory (CWA) valid for the accident site at the accident time.

10.0 Airmen's Meteorological Information

There were no NWS Aviation Weather Center (AWC) text Airmen's Meteorological Information (AIRMET) advisories valid for the accident site at the accident time.

11.0 Graphical Forecasts for Aviation

The Graphical Forecasts for Aviation (GFA) products issued by the AWC before the accident flight and valid at 2200 CDT on July 6 and 0100 CDT on July 7 are shown in attachment 2. The GFA surface forecasts applicable to the accident site that were valid before the accident flight's departure at 2200 CDT on July 6 indicated MVFR surface visibilities with a west wind of 5 knots and scattered (30 to 50 percent chance) thunderstorms. By 0100 CDT, the GFA surface forecasts indicated VFR conditions with no chance for precipitation. There were no Graphical AIRMET²⁰ (G-AIRMET) valid for the accident site. The GFA cloud forecast applicable to the accident site that was valid at 2200 CDT on July 6 indicated scattered to overcast clouds at the accident site with bases at 800 ft and tops at 16,000 ft with layered clouds to FL400²¹. By 0100 CDT, the GFA cloud forecast indicated few to broken cloud coverage with bases at 700 ft and cirrus above. The only human-generated information reflected in the two GFA products were the G-AIRMETs.

²⁰ Graphical AIRMETs (G-AIRMETs), found on the Aviation Weather Center webpage at <http://aviationweather.gov>, are graphical forecasts of en-route weather hazards valid at discrete times no more than 3 hours apart for a period of up to 12 hours into the future (for example, 00, 03, 06, 09, and 12 hours). G-AIRMETs are snap shots at discrete time intervals as defined above. The text AIRMET is the result of the production of the G-AIRMET but provided in a time smear for a 6hr valid period.

²¹ 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.

12.0 Terminal Aerodrome Forecast

KMLU was the closest site with an NWS Terminal Aerodrome Forecast²² (TAF) current at the time of the accident. The amended KMLU TAF valid at the accident time was issued at 1856 CDT on July 6 and was valid for a 24-hour period beginning at 1900 CDT on July 6.

FTUS44 KSHV 062356 AAB
TAFMLU
TAF AMD
KMLU 062356Z 0700/0724 07005KT P6SM -RA FEW060 BKN080 OVC110
FM070300 VRB05KT P6SM SCT120 BKN250
FM071500 25006KT P6SM SCT030 BKN100 BKN250
FM071800 27006KT P6SM BKN100
FM072000 24006KT P6SM BKN250=

Between 2200 CDT on July 6 and 1000 CDT on July 7 the KMLU forecast expected a variable wind at 5 knots, 6 miles visibility or greater, scattered clouds at 12,000 ft agl, and a broken ceiling at 25,000 ft agl.

13.0 National Weather Service Area Forecast Discussion

The NWS weather forecast office in Shreveport, Louisiana, (WFO SHV) was responsible for the KMLU TAF. WFO SHV issued the following Area Forecast Discussion (AFD) at 2220 CDT July 6. This was the AFD with an Aviation section issued closest to the accident time.

FXUS64 KSHV 070320
AFDSHV

Area Forecast Discussion
National Weather Service Shreveport LA
1020 PM CDT Thu Jul 6 2023

...New UPDATE...

.UPDATE...
Issued at 1019 PM CDT Thu Jul 6 2023

No update is needed to the afternoon forecast package at this time.

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²² 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

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.SHORT TERM...

(This evening through Friday Night)

Issued at 225 PM CDT Thu Jul 6 2023

Several factors have come together today to make for a more active afternoon of convection compared to earlier this week. First, an upper trough continues to shift SE along the I-30 corridor with an associated sfc cold front easing southward into our northern zones. Not surprisingly, this is where convection has been most active so far today with rather robust thunderstorms ongoing. Farther south, convection has been more isolated to widely scattered as a decent sea breeze push has aided in the development of showers and storms along and south of I-20. Moving forward into this evening, expect storm coverage to maintain over a fairly broad sector of the area as instability and forcing will persist longer compared to recent nights due the presence of the aforementioned sfc and upper-level features. Therefore, have maintained to chance to likely PoPs for the vast majority of the region through this evening with gradual fading of convection later in the overnight hours. In terms of the active threats, we still continue to closely monitor storms for a damaging wind potential along with heavy rainfall and localized flooding as storms have been very efficient rain producers so far this afternoon. As convection fades, rain-cooled temperatures will range from the upper 60s far north through the lower to mid 70s elsewhere.

On Friday, we will lose most of the forcing that we had today with the trough shifting east and the frontal boundary stalling or even trying to retreat back northward. Therefore, temperatures will be slightly hotter tomorrow while rain chances will be on the decline as compared to today. This will be due in part to the upper ridge out to our west slowly building farther east toward central Texas. Thus, any rain chances will be generally confined to our northern and eastern zones as diurnally driven convection will still manage to develop and ride along the eastern periphery of the ridge axis. In addition, a shortwave will likely shift SE across our northern zones late Friday through Friday night so have kept low-end PoPs over our far northern areas through the evening and overnight. Otherwise, the remainder of the region should remain dry with low temperatures generally ranging in the mid 70s following afternoon highs in the lower to mid 90s.

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.LONG TERM...

(Saturday through next Wednesday)

Issued at 225 PM CDT Thu Jul 6 2023

Starting 12z Saturday...Bottom line up front, unsettled weather pattern will remain in place through the entire long-term period. Not everywhere will see thunderstorms each day, however, I believe that portions of our area will. The upper-air pattern early Saturday morning will continue to feature a large trough centered over central Canada and stretching into the northern Plains. At the same time, the long-standing upper ridge over the Desert Southwest will begin to flatten out some. As this happens, it will naturally expand eastward and into portions of our area through the day Saturday.

This will be evident in two ways...first, temperatures will respond to the building ridge by increasing as we head into the weekend. Granted it won't be a drastic increase, but we should see a return to the upper 90s for portions of the area. This will be greatest felt for areas south of I-20. Second, PoPs will be confined to areas to our north and far east/southeast zones with a gap of lower PoPs from Shreveport east along I-20. A very similar story will be seen on Sunday, however, we could see a more drastic temperature difference from north to south as troughing begins to dig deeper into our area.

Heading into next week, the aforementioned trough will dig further to the south, extending into the Gulf of Mexico. At the same time, the upper-level ridge will retrograde back to the west, remaining centered over the Desert Southwest. This will actually increase our northwest flow, and keep PoPs in the forecast, being more widespread in nature for Monday. Through the rest of the week, the trough will begin to push east and ridging will once again build into our western zones. This will keep the greatest PoP chances across our eastern zones with dryer and warmer conditions across our western zones.

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.AVIATION...

(00Z TAFS)

Issued at 612 PM CDT Thu Jul 6 2023

For the 07/00z TAFs...Ongoing convection is currently impacting most terminals. The exception is for KTXK and KLFK where some clearing of the storms has been seen. The rest of the terminals either continue to contend with thunderstorms and rainfall which has limited visibility and lowered CIGs at times. In addition, brief gusty winds have been seen at times, with observed speed of 31 kts at KSHV with an outflow boundary. Expecting this activity to continue into the evening hours before diminishing after sunset. From here, we should see a return to some VFR conditions, although a few terminals might see some patchy fog overnight that could limit some visibility, right now the site I am most concerned about is KLFK. VFR conditions should return across the region by 07/18z before another round of afternoon convection

should commence. /33/

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.PRELIMINARY POINT TEMPS/POPS...

SHV 74 95 77 95 / 60 20 0 10
MLU 73 93 75 95 / 60 40 10 20
DEQ 70 90 74 90 / 40 20 10 40
TXK 72 93 76 94 / 60 20 10 30
ELD 70 91 73 92 / 60 30 10 30
TYR 74 95 77 96 / 40 10 0 10
GGG 73 94 76 95 / 50 10 0 10
LFK 73 95 75 96 / 20 20 0 10

&&

.SHV WATCHES/WARNINGS/ADVISORIES...

AR...None.

LA...None.

OK...None.

TX...None.

&&

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14.0 Winds and Temperature Aloft Forecast

The NWS 2100 CDT on July 6, Winds and Temperature Aloft forecast valid for the closest points to the accident site are included below:

FBUS31 KWNO 070200

FD1US1

DATA BASED ON 070000Z

VALID 070600Z FOR USE 0200-0900Z. TEMPS NEG ABV 24000

FT 3000 6000 9000 12000 18000 24000 30000 34000 39000
JAN 2711 2606+16 9900+11 9900+06 2909-07 2913-16 252230 262841 272753
SHV 2405 9900+17 3107+11 2912+07 3317-05 3320-17 272732 253041 283747

The 2100 CDT on July 6 forecast was for use between 2100 CDT on July 6 and 0400 CDT on July 7.

15.0 Pilot Weather Information

Title 14 CFR 91.103 states that “Each pilot in command shall, before beginning a flight, become familiar with all available information concerning that flight.” FAA AC 91-92 “Pilot’s Guide to a Preflight Planning” (dated March 15, 2021) provided pilot guidance on preflight self-briefings, including planning, weather interpretation, and risk identification/mitigation skills. The AC further stated in part:

Pilots adopting these guidelines will be better prepared to interpret and utilize real-time weather information before departure and en route, in the cockpit, via technology like Automatic Dependent Surveillance-Broadcast (ADS-B) and via third-party providers.²³

A search of archived information indicated that the accident pilot did not request weather information from Leidos Flight Service. The accident pilot did have an account through ForeFlight, however, no activity was noted through ForeFlight on July 6 or 7. It is unknown what weather information, if any, the accident pilot checked or received before or during the accident flight.

16.0 Astronomical Data

The astronomical data obtained for the accident site on July 7, 2023, indicated the following:

SUN

Accident time 0023 CDT²⁴

Begin civil twilight 0538 CDT

Sunrise 0606 CDT

Sun transit 1312 CDT

Sunset 2018 CDT

End civil twilight 2046 CDT

At the time of the accident the Sun was below the horizon.

²³ https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_91-92.pdf. The AC also listed multiple online FAA resources for aviation flight planning services for adverse weather.

²⁴ Inserted accident time for reference and context.

MOON

Moonrise 2354 CDT on July 6

Accident time 0023 CDT²⁵

Moon transit 0459 CDT

Moonset 1045 CDT

At the time of the accident the Moon was at an altitude of 11.19° and azimuth of 113.63° with 80.5 percent of its disk illuminated.

E. LIST OF ATTACHMENTS

Attachment 1 - GOES-16 Nighttime Microphysics RGB imagery animation from 2301 CDT on July 6 to 0301 CDT on July 7

Attachment 2 - GFA information valid at the accident time

Submitted by:

Paul Suffern
Senior Meteorologist

²⁵ Inserted accident time for reference and context.