

NTSB Weather Data

NTSB Case number: ERA22FA085

Synoptic conditions – The NWS Surface Analysis Chart for the southeast for 1600 EST on December 10, 2021, is included as figure 1 with the approximate accident site noted by the red star. The chart depicted a low-pressure system at 1019-hectopascals (hPa) over North Carolina with a warm front extending southwest through South Carolina and then turning westward into Georgia, then northward across northeast Alabama, into Tennessee and Kentucky immediately west of the accident site. The warm front Another deep low-pressure system over Kansas at 991-hPa was developing, which would bring severe thunderstorms over Arkansas, Missouri, Tennessee, and Kentucky later in the day. Numerous station models over Georgia north of the warm front indicated visibility restricted in fog/mist, and drizzle. While the station model in the vicinity of the accident site depicted southerly winds of 5 to 10 knots, overcast clouds, temperature and dew points of 54° Fahrenheit (F). Several stations in Kentucky east of the warm front also reported visibility restrictions in fog/mist, and light rain.

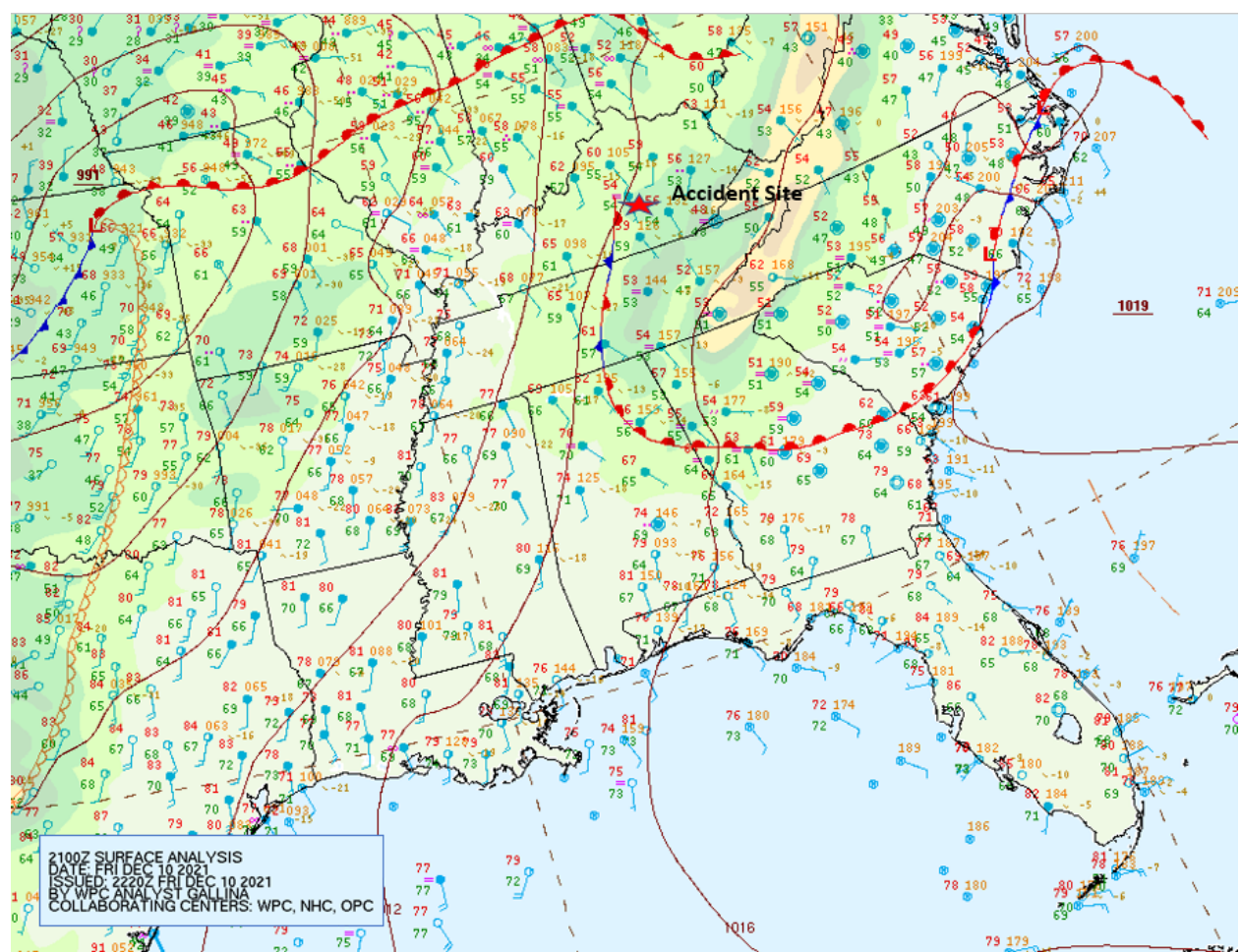


Fig 1

A review of the NWS Composite Radar Mosaic for the time of the accident indicated that there were no meteorological echoes associated with significant measurable precipitation within 50 miles of the

accident site. Figure 2 is the regional composite radar image for 1650 EST with the approximate accident site and the destination marked.



Fig 2

Observations – the accident airplane’s destination was Stuart Powell Field Airport (KDVK), Danville, Kentucky, which was located approximately 13 nautical miles (nm) northwest of the accident site. The airport lists an elevation of 1,022 ft and had an Automated Weather Observation System (AWOS) that was not augmented by any human observer and issued observations every 20-minutes. The magnetic variation was estimated at 5° west based on the latest sectional chart for the area. The following conditions were reported surrounding the time of the accident.

Routine weather observation for KDVK at 1635 EST, automated, wind from 190° at 5 knots, visibility 10 statute mile or more, ceiling overcast at 300 ft agl, temperature 13° Celsius (C) (55° F), dew point temperature 12° C (54° F), altimeter setting 29.90 inches of mercury (inHg). Remarks: automated station with a precipitation discriminator.

Routine weather observation for KDVK at 1655 EST, automated, wind from 190° at 5 knots, visibility 10 statute mile or more, ceiling overcast at 500 ft agl, temperature 13° Celsius (C) (55° F), dew point temperature 12° C (54° F), altimeter setting 29.89 inches of mercury. Remarks: automated station with a precipitation discriminator.

The general flight conditions (VFR, **MVFR**, **IFR**, **LIFR**) and raw METAR observations surrounding the period prior to the accident airplane's departure in Georgia through the time of the accident were as follows. The time of the accident has been added in bold italic type, with the observations decoded above also in bold type.

As defined by 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.

MVFR METAR KDVK 101615Z AUTO 19007KT 10SM OVC011 13/10 A2998 RMK AO2=
MVFR METAR KDVK 101635Z AUTO 19009KT 10SM OVC011 13/10 A2997 RMK AO2=
MVFR METAR KDVK 101655Z AUTO 20008KT 10SM OVC011 13/10 A2996 RMK AO2=
MVFR METAR KDVK 101715Z AUTO 20006KT 10SM OVC011 13/11 A2996 RMK AO2=
MVFR METAR KDVK 101735Z AUTO 19008KT 10SM OVC011 13/11 A2994 RMK AO2=
MVFR METAR KDVK 101755Z AUTO 19008KT 10SM BKN013 13/11 A2992 RMK AO2=
MVFR METAR KDVK 101815Z AUTO 19009KT 10SM BKN011 BKN016 13/11 A2991 RMK AO2=
MVFR METAR KDVK 101835Z AUTO 20006KT 10SM OVC011 13/11 A2992 RMK AO2=
IFR METAR KDVK 101855Z AUTO 20008KT 180V240 10SM OVC009 13/11 A2991 RMK AO2=
IFR METAR KDVK 101915Z AUTO 19009G14KT 10SM OVC009 13/11 A2991 RMK AO2=
IFR METAR KDVK 101935Z AUTO 19006KT 10SM DZ OVC007 13/11 A2991 RMK AO2=
IFR METAR KDVK 101955Z AUTO 18008KT 10SM OVC007 12/11 A2990 RMK AO2=
IFR METAR KDVK 102015Z AUTO 18008KT 4SM BR OVC005 12/12 A2990 RMK AO2=
LIFR METAR KDVK 102035Z AUTO 19005KT 4SM BR OVC003 12/12 A2990 RMK AO2=
LIFR METAR KDVK 102055Z AUTO 18007KT 5SM BR OVC003 12/12 A2989 RMK AO2=
LIFR METAR KDVK 102115Z AUTO 19007KT 7SM OVC003 12/12 A2988 RMK AO2=
LIFR **METAR KDVK 102135Z AUTO 19005KT 10SM OVC003 13/12 A2990 RMK AO2=**
Accident 2151Z
IFR **METAR KDVK 102155Z AUTO 19005KT 10SM OVC005 13/12 A2989 RMK AO2=**
IFR METAR KDVK 102215Z AUTO 18006KT 10SM OVC007 13/12 A2988 RMK AO2=
IFR METAR KDVK 102235Z AUTO 17007KT 10SM OVC007 13/12 A2988 RMK AO2=
IFR METAR KDVK 102255Z AUTO 18006KT 10SM OVC007 13/13 A2988 RMK AO2=

A plot of the observation from the NWS Aviation Weather Center's METAR display for 1655 EST is included as figure 3 with the approximate accident site marked by the red star. The image depicted general MVFR conditions south of the accident site with IFR and LIFR immediately north and over the planned destination of KDVK.

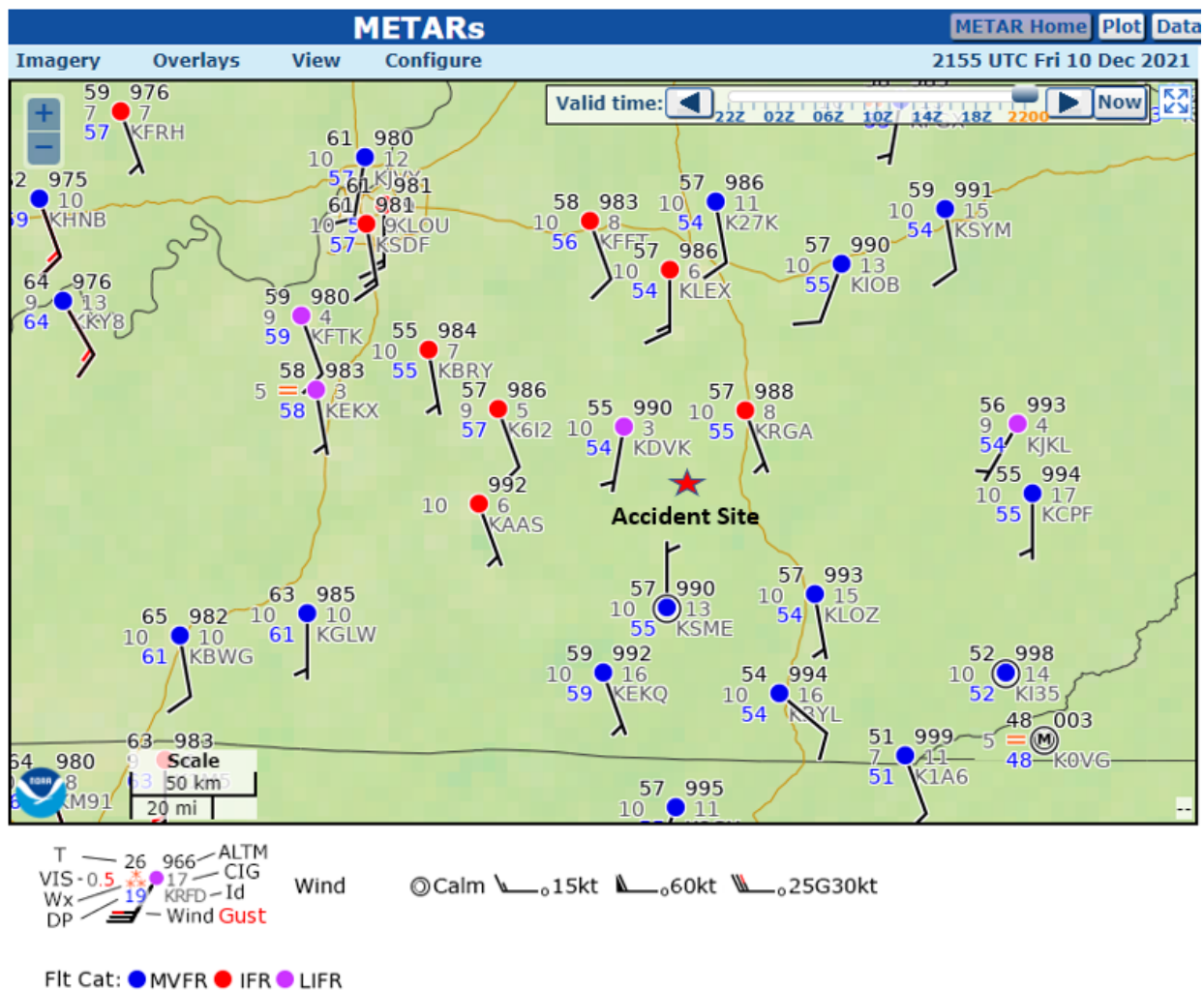


Fig 3

Sounding – A High-Resolution Rapid Refresh (HRRR) numerical model was obtained from the NOAA Air Resource Laboratory for the accident site coordinates. The HRRR model nearest grid data was then plotted on a standard skew T log P diagram using the RAOB Analysis software for 2200 EST. The sounding depicted an elevation of 1,053 ft over the grid point, with a near surface temperature of 13.4°C (56° F), with a dew point temperature of 12.3°C (54° F), a relative humidity of 93%, which resulted in a density altitude of 1,344 ft. The lifted condensation level (LCL) was identified at 459 ft agl, with the convective condensation level (CCL) at 3,909 ft agl. The sounding was saturated supporting clouds from the LCL through 7,000 ft msl, and between 15,000 ft through 20,000 ft. The precipitable water content was 1.34 inches. A frontal inversion was noted immediately above the surface through 3,000 ft msl where temperature increased with height. The freezing level was identified at approximately 12,000 ft msl (indicated by blue horizontal line across sounding), and supported structural icing in clouds above that level. The atmosphere was characterized as stable with a Lifted Index of 7.6, with no convective available potential energy (CAPE) values. The RAOB analysis program supported nimbostratus type clouds capable of producing light rain.

The HRRR wind profile indicated a surface wind from the south or from 170° at 9 knots with gusts potentially to 19 knots, with winds veering to the west with height with increasing winds speeds. The mean 0 to 6 kilometer (or 18,000 ft) wind was from 250° at 43 knots. A low-level jet or wind maximum was identified from 240° at 45 knots at approximately 6,500 ft.

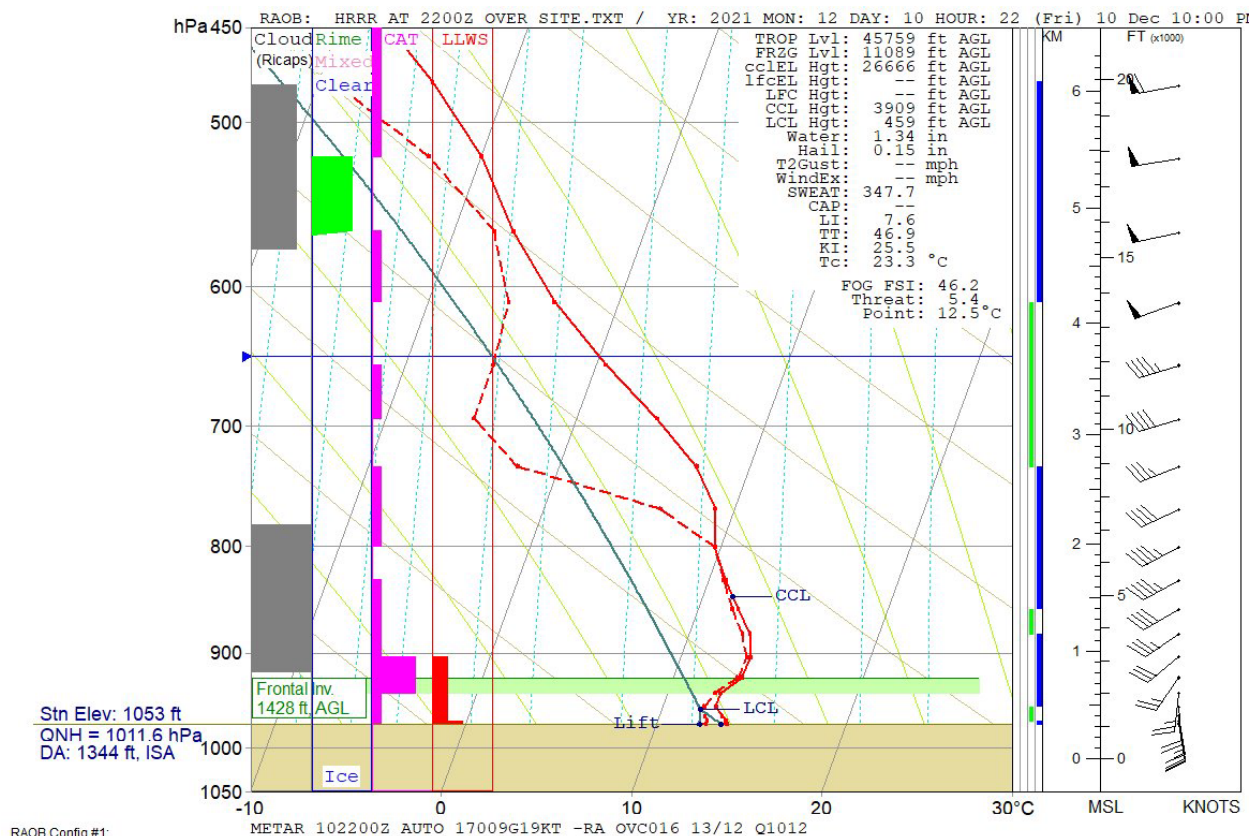


Fig 4

A table of the HRRR parameters of height, pressure, temperature (T), dew point temperature (Td), relative humidity (RH), wind, and potential Clear Air Turbulence (CAT), Low-Level Wind Shear (LLWS), and icing potential below 10,000 ft is included below.

Height (ft-msl)	Pres (hPa)	T (C)	Td (C)	RH (%)	Wind (deg/kts)	CAT (FAA)	LLWS (FAA)	Icing (AFGWS)
1053	974	13.4	12.3	93	171/ 9			
1081	973	13.7	12.6	93	171/ 8	LGT	MODRT	
1167	970	13.6	12.6	94	172/ 13	LGT	LIGHT	
1310	965	13.3	12.4	94	172/ 16	LGT	LIGHT	
1598	955	12.8	12.2	96	176/ 20	LGT	LIGHT	
2006	941	12.8	12.5	98	187/ 23	SVR	LIGHT	
2481	925	13.6	13.4	99	212/ 26	SVR	LIGHT	
3118	904	13.7	13.5	99	228/ 32	LGT		
3832	881	13.2	12.8	97	233/ 36	LGT		
4595	857	12.1	11.8	98	237/ 40	LGT		
5476	830	10.9	10.8	99	239/ 43			

6485	800	9.7	9.7	100	240/ 45	LGT
7634	767	9.0	6.1	82	243/ 42	LGT
8901	732	7.2	-2.2	51	248/ 36	
10333	694	4.2	-5.4	50	252/ 38	LGT

The RAOB Analysis program indicated a high probability of moderate-to-severe turbulence between 2,000 and 3,000 ft msl in the frontal inversion with strong vertical wind shear of 10.0 kts/1000 ft or greater.

Satellite Imagery – The Geostationary Operational Environmental Satellite number 16 (GOES-16) data were obtained from an archive at the Space Science Engineering Center (SSEC) at the University of Wisconsin-Madison in Madison, Wisconsin, and processed using the Man-computer Interactive Data Access System (McIDAS) software. The GOES-16 infrared band 13 image for 1651 EST at 4X magnification with a standard temperature enhancement curve applied as well as the fronts from 2100 EST is included as figure 5. The image depicted an overcast area of low and mid-level clouds over the accident site with a radiative cloud top temperature of 249 Kelvin or -24° C, which corresponded to cloud tops near 24,500 ft. Figure 6 is the GOES-16 visible image for the same period at 2X magnification.

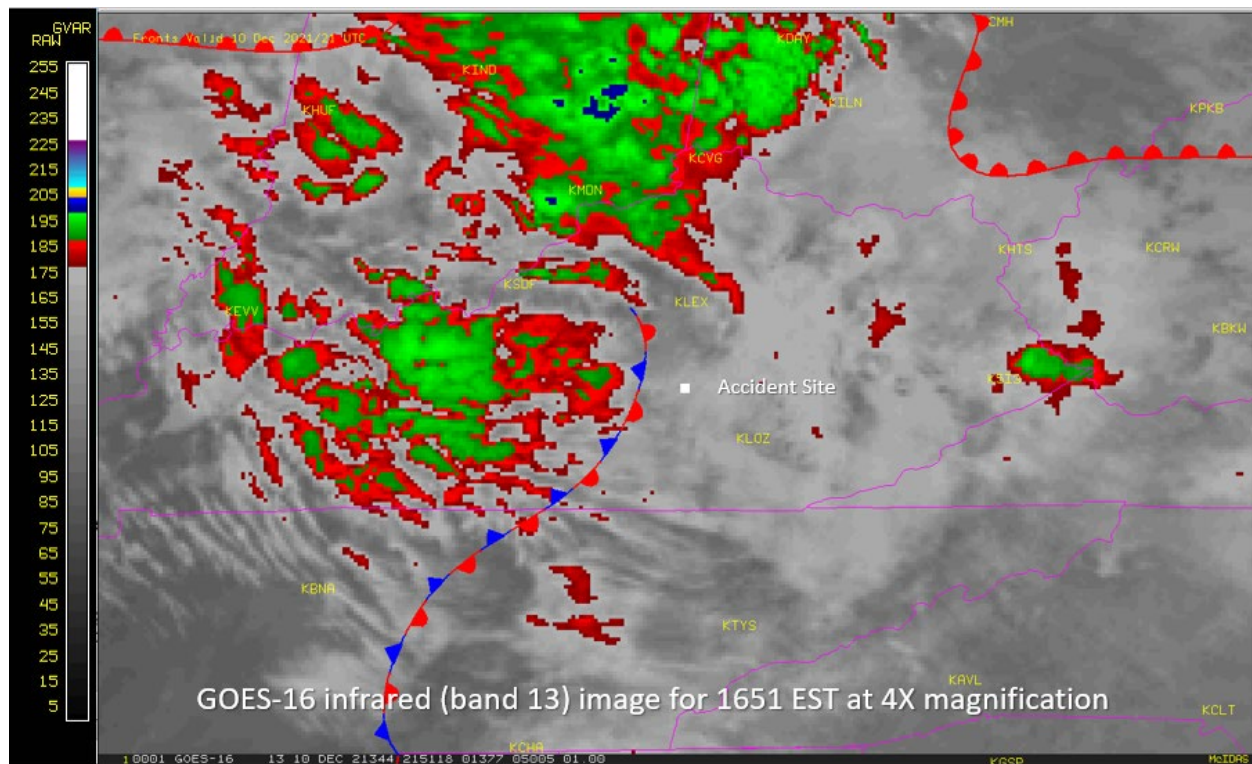


Fig 5

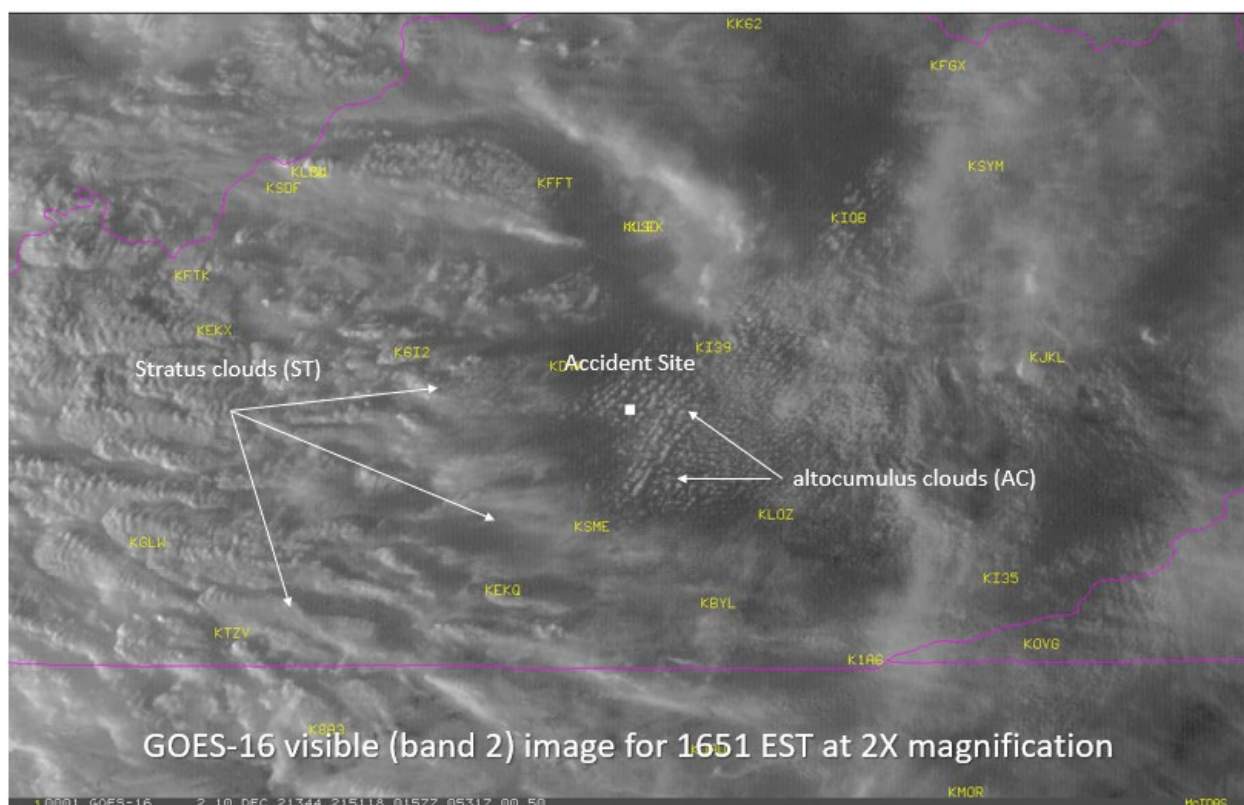


Fig 6

Pilot Reports – the following pilot reports or PIREPs were reported within 100 miles of the accident site below 18,000 ft between 1300 through 1800 EST (1800Z-2300Z).

TYS UA /OV RKYTP/TM 1802/FLDURD/TP A320/SK TOPS 030 BASES 027 OVC
 CVG UA /OV 15 S GAVNN/TM 1803/FLDURD/TP BE40/TA M10/IC LT RIME 150-140
 LEX UA /OV FLM133028/TM 1803/FL150/TP BE40/TA M10/IC LGT RIME 150-140
 LEX UA /OV LEX/TM 1805/FL021/TP CRJ2/SK OVC021
 BYL UA /OV KBYL/TM 1824/FL024/TP BE55/SK BASE 024/WX VIS 10SM/TB NEG/IC NEG
 LEX UA /OV LEX/TM 1835/FL022/TP BE20/SK OVC022
 CVG UA /OV CVG270010/TM 1835/FLDURC/TP A320/SK B018 OVC T036
 LOU UA /OV KLOU/TM 1837/FL017/TP C56X/SK OVC017/RM DURC
 LEX UA /OV LEX/TM 1903/FL022/TP CRJ2/SK OVC022
 TYS UA /OV TYS/TM 1914/FL028/TP CRJ7/SK BASES 028
 SDF UA /OV IIU270030/TM 1915/FL120/TP A319/TA M5/TB NEG
 SDF UA /OV SDF/TM 1917/FLDURC/TP B737/SK OVC017-TOP027
 CVG UA /OV CVG270005/TM 1932/FLDURC/TP B762/SK B018 OVC T033/RM CLR ABV
 LOU UA /OV KLOU/TM 1938/FL025/TP B350/SK OVC018-TOP025/RM DURC
 LUK UA /OV DURD RWY 21L/TM 1955/FL015/TP GLF5/RM BASES 1500
 LOZ UA /OV AZQ/TM 2004/FL120/TP C310/WX VMC/TA 4/WV 258071/TB NEG
 LEX UA /OV KLEX/TM 2006/FL023/TP E50P/SK B023
 CVG UA /OV 10 S CVG/TM 2015/FLDURC/TP A320/SK BASES 005 OVC TOPS 035/TB SMOOTH
 LOU UA /OV KLOU/TM 2018/FL023/TP TBM7/SK OVC023/RM DURD
 SDF UA /OV JVV/TM 2029/FLDURC/TP C172/SK B017
 LEX UA /OV LEX/TM 2052/FL019/TP DA62/SK OVC019
 SDF UA /OV IIU/TM 2102/FL185/TP TBM9/TB NEG/IC NEG

LOZ UA /OV LVT030040/TM 2103/FL100/TP P32R/WX VMC/TA 06/RM OVC ABV
LEX UA /OV LEX/TM 2105/FLDURC/TP A320/SK B019
HTS UA /OV ECB/TM 2105/FL100/TP A320/SK BASE 075/TB NEG/IC NEG
LEX UA /OV HYK180020/TM 2108/FL070/TP A320/SK TOP 071
SDF UA /OV SDF/TM 2115/FL080/TP B763/SK MULTI BKN LAYERS/TB NEG/RM DURC
LOU UA /OV 060008/TM 2119/FLDURD/TP PAY2/WX IMC/TB LIGHT CHOP
LEX UUA /OV LEX/TM 2129/FL010/TP C525/RM LLWS +10KTS SHORT FINAL RWY 22

Accident 2151Z

CVG UA /OV CVG360002/TM 2154/FLDURD/TP B738/SK B010 OVC TUNKN/TB LIGHT AT 130
LEX UA /OV LEX/TM 2205/FL014/TP PC12/SK OVC014
CVG UA /OV CVG160010/TM 2237/FLDURC/TP CRJ9/SK B020 OVC TUNKN
SDF UA /OV 10SW IMS/TM 2241/FL025/TP C501/WX IMC/TB NEG
LOU UA /OV KLOU/TM 2257/FL012/TP C172/SK BKN012/RM DURD

NWS Forecasts - The closest Terminal Aerodrome Forecast (TAF) to the accident site was from Blue Grass Airport (KLEX), Lexington, KY, located approximately 29 miles north of KDVK and from Lake Cumberland Regional Airport (KSME), Somerset, KY, located 32 miles south of KDVK.

TAF KLEX 101731Z 1018/1118 17009KT P6SM VCSH OVC011
FM110300 18018G28KT P6SM VCTS OVC015CB WS020/21050KT
FM110700 20029G34KT 4SM TSRA BR OVC015CB WS020/21055KT
FM111400 22024G31KT P6SM SHRA OVC050=

TAF KSME 101739Z 1018/1118 18007KT P6SM VCSH OVC010
TEMPO 1018/1019 5SM -SHRA OVC007
FM110100 18010G21KT P6SM OVC015
FM110700 20015G26KT P6SM VCSH OVC035 WS020/21045KT
FM111100 21016G32KT P6SM SHRA OVC035 WS020/21040KT
FM111200 21016G32KT P6SM SHRA OVC025 WS020/21050KT=

Area Forecast Discussion (AFD) – issued by the Louis (KLMK) Weather Forecast Office discussing the general forecast and aviation impacts during the period. The long-term discussion has not been excluded.

FXUS63 KLMK 101742
AFDLMK
Area Forecast Discussion
National Weather Service Louisville KY
1242 PM EST Fri Dec 10 2021

...Updated Aviation Discussion...

.Forecast Update...
Issued at 1053 AM EST Fri Dec 10 2021

Overcast conditions were noted across the region this morning. Temperatures were fairly mild with readings in the low-mid 50s east of I-65 with mainly upper 50s to low 60s out west of the Natcher Parkway. Dewpoints were in the low 50s out near the I-75 corridor with mid 50s dewpoints along and west of the I-65 corridor. Some lower 60 dewpoints were already creeping into far southwest KY this morning.

In the near term, mostly cloudy skies will continue throughout the day. Even with no sunshine, continued moisture, temperature, and theta-e advection will allow temperatures to warm into the mid 60s across southern Indiana and over into the Bluegrass area. Upper 60s are expected south of the BG/WK Parkways and a few spots south of the Cumberland Parkway could top 70.

Model soundings for this afternoon suggests a strong temperature inversion aloft just below 850 hPa which will tend to keep moisture trapped below it. So cloudy skies are likely to continue with patchy areas of drizzle. As warm sector warm front lifts into the region this afternoon, it is possible that we could see some scattered elevated convection develop perhaps around the WK/BG Parkways by late afternoon. This would quickly race off to the northeast leaving us mainly dry this evening within the warm sector.

We have begun to process the 10/12Z data suite this morning. Overall, we are starting to see the various high resolution models slowly converge on a more common/unified solution with respect to convective development. It appears that we'll see scattered convection develop by mid-evening mainly in areas west of I-65. The NAM runs continue to keep a bit of CINH in place from I-65 and points west. However, the continued moisture advection and especially theta-e advection will likely erode a bit of this cap across western KY and southwest Indiana. We're still a bit uncertain how far east that cap will hold. However, the main idea here is that scattered discrete convection is likely across western TN, western KY, and into SW Indiana this evening and into the overnight hours. This will pose a threat for supercells with wind damage and isolated tornadoes being possible given the tremendous amount of shear. As we move into the overnight hours the convection is likely to develop more into a linear type system and then head eastward. There remains a good spread in the high resolution data on when the majority of convection gets into the LMK CWA. The operational 3Km NAM is slowest keeping convection out to our west until sunrise Saturday. The HRW core models and HRRR are a bit faster bringing the line in prior to sunrise. The thermodynamic and kinematic set up generally remains the same featuring marginal low-level lapse rates, impressive shear profiles, but also a bit of a nocturnal stable layer near the surface. We have a lot of uncertainty on how strong that stable layer will be. However, the threat of damaging winds, isolated to scattered tornadoes, and heavy rainfall are still likely across the region tonight.

We will continue to look through the full suite of 10/12Z data along with the overnight SREF and HREF data to get a fuller picture of what may develop tonight and will discuss that in the afternoon discussion.

*.Short Term...(Today through Saturday)
Issued at 350 AM EST Fri Dec 10 2021*

...SIGNIFICANT NIGHTTIME SEVERE WEATHER EVENT EXPECTED LATE TONIGHT INTO SATURDAY MORNING...

An upper level trough over the Intermountain West amplifies and progresses eastward through the Northern Plains today and into the Upper Midwest by Saturday morning. At the surface, a low pressure system develops and then deepens as it tracks from central KS northward into northern MI by tomorrow morning. Unseasonably warm moist air will continue to advect into the region thanks to a strong south-southwesterly flow ahead of the approaching system. PWAT values will increase from around 1" to over 1.5" by later this evening as a warm front continues to lift into northern IN leaving all of southern IN/central KY well within the warm sector.

While there will be plenty of low level moisture across the area today, model soundings continue to maintain a cap between 850-900mb through the afternoon and early evening. With weak/broad forcing over the area and overcast low stratus, scattered light rain and drizzle will be possible. Although it will be cloudy to mostly cloudy, the strong WAA advection will help temperatures warm into the mid/upper 60s with a few locations across southern KY into the low 70s.

By this evening, the upper level trough axis will be located across the Northern Plains and push eastward into the Ohio Valley overnight. As it does, it will work a strengthening and robust mid-level jet of 100-110kt from MO into IL as a vigorous 60-70kt LLJ takes shape and moves in over the area ahead of an advancing cold front which will be working across MO and western IL. All of this combined will result in a round of strong to severe thunderstorms overnight into early Saturday morning across the Ohio Valley. These storms will have the likelihood of producing damaging winds and possible tornadoes as it works across southern IN and central KY.

That is why the SPC continues to have most of western/central KY along with southern IN in an enhanced risk for severe weather tonight. The SPC continues to have eastern KY in a slight risk that carries over into Saturday morning as the line of strong storms pushes eastward.

While confidence is high that the ingredients are in place for a rare nocturnal severe weather event in December with plenty of high deep level shear and relatively low instability, some of the models continue to differ on convective development and timing. NAM continues to be the slowest from its 00/06z runs having the cold front come in around and just after sunrise on Saturday while the other convective allowing models bring a prefrontal line of convection just after midnight and pushes it eastward through the overnight. The 06z run of the HRRR is following the NAM but is still faster bringing the convective line towards the predawn hours across the area. Going forecast is a bit of a blend of the two leaning a little more towards the faster HRRR.

Through the first part of the evening, model soundings continue to hold on to the capping inversion but as the strong LLJ approaches, that cap will erode. Once that happens, we expect to see isolated/scattered convection start to develop across the area. Given the shear profile and the significant curved low level hodograph, discrete and slightly organized cells could produce damaging winds and tornadoes. As we go deeper into the overnight

towards the predawn hours, the hi-res models start to develop a QLCS line of storms ahead of the front where the better forcing is. While the 0-3km bulk shear vectors do not look perpendicular to the squall line, the speed of the shear (>30kt) will not limit the line normal bulk shear available. Any bowing segments within the line of convection would be capable of producing damaging straight line winds or a rapid spin resulting in embedded QLCS tornado.

Given the high and near record PWAT values across the area heavy rain will be likely with any convection that forms. Given the progressive nature of the system, heavy rain lingering over any particular location for any length of time would be limited, thus reducing the flood threat. With that being said, we can't rule out the possibility of a few isolated flash flooding issues if we get some localized training of storms. Given the rain from earlier in the week, some of our rivers are still running high and heavy rain over these basins could lead to quick rising flood points on area rivers.

Outside of the severe threat, strong gusty winds ahead of the cold front overnight could result in strong gradient gusts of 30-35mph. Between both the winds with the storms and the gusty winds, it would be highly recommended to either secure or take down any holiday decorations that could be damaged in the wind.

Showers and storms look to exit eastward by midday/early afternoon on Saturday as the cold front sweeps through during the morning. Winds will remain breezy, temperatures will fall from the 50s/60s Saturday morning into the 40s and upper 30s by evening.

.Aviation...(18Z TAF Issuance)

Issued at 1242 PM EST Fri Dec 10 2021

IMPACTS:

- **Low stratus this afternoon with scattered showers**
- Southerly winds increase this afternoon and become gusty tonight
- Gusts tonight and overnight of 30-35kt

- **Strong to severe thunderstorms moving through overnight**
- *Strong/gusty southwest to west winds will be seen on Saturday*

DISCUSSION:

Low stratus will remain in place this afternoon as moisture is pooled under an elevated warm nose aloft.

As the afternoon wears on, some scattered elevated convection may develop. For now, coverage looks rather sparse, and we'll just handle it with some VCSH. Cigs are going to hang around the 1000-1200 ft AGL level through the afternoon, though I can't rule out that some sites could drop below 1000 ft at times.

For the evening and overnight period, we expect scattered convection to develop after dark across western KY and southwest Indiana. These storms are expected to organize into a well developed squall line that will race across the region. While not explicitly defined in the TAFs, localized gusts over 50kts can be expected in this line.

Additionally wind fields aloft are very strong and LLWS is expected at all the terminals this evening and into the overnight period.

Convection should clear the terminals after sunrise Saturday however, scattered rain showers and gusty southwest to westerly winds are expected throughout the day.

CONFIDENCE:

Medium-high on all elements.

.LMK WATCHES/WARNINGS/ADVISORIES...

IN...None.

KY...None

Graphic Forecast for Aviation (GFA) – the GFA issued about 1400 EST and available for preflight briefing prior to departure and valid at the time of the accident are included as figures 7-8. The GFA Surface Chart depicted southerly winds of 10 to 20 knots, with visibilities less than 3 statute miles over central Kentucky over the accident site. Light rain was likely over northern Kentucky during the period. The cloud forecast expected overcast clouds with bases near 1,600 ft msl with layered clouds to 39,000 ft. A Graphic-AIRMET for icing extended over the region with an AIRMRT for mountain obscuration over eastern Kentucky and Tennessee, and northern Georgia.

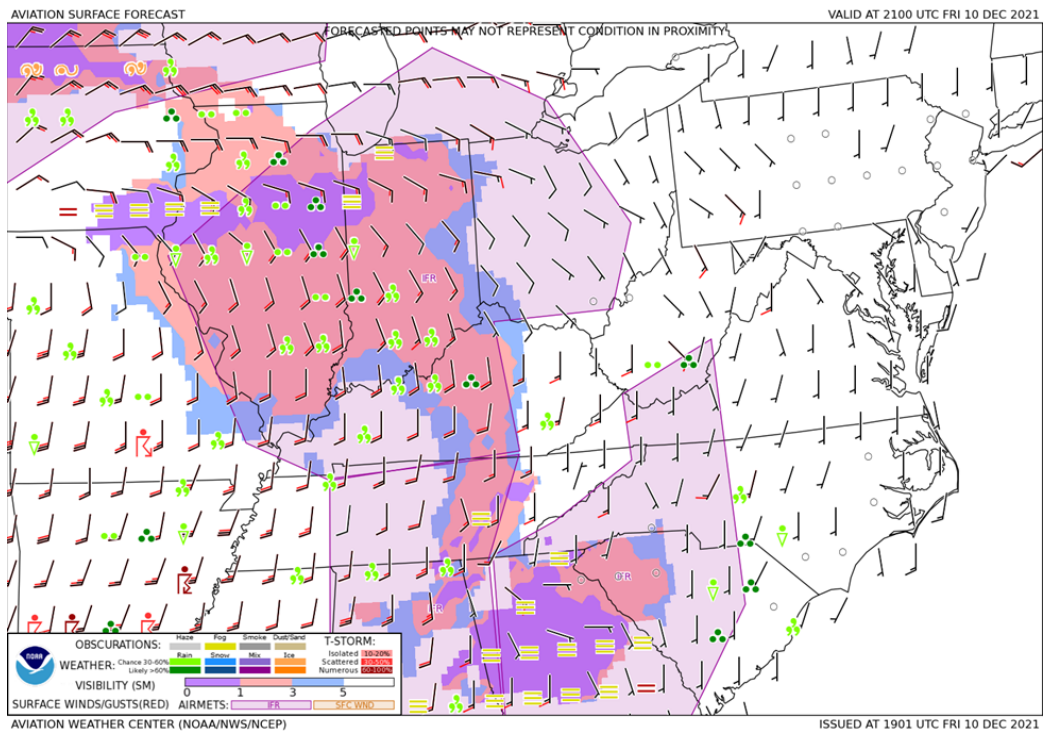


Fig 7

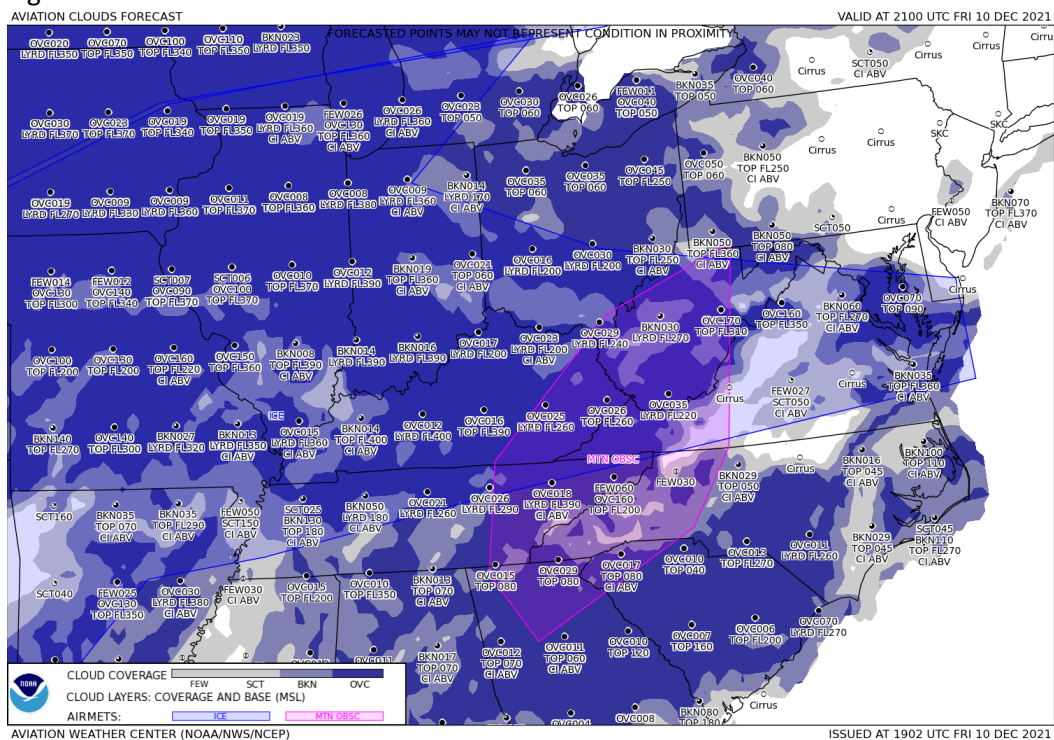


Fig 8

Winds and Temperature Aloft Forecast – the NWS winds aloft forecast (FD) for the approximate route of flight were issued at 0858 EST and valid for 1300 EST, and for use between 0900 through 1600 EST were

as follows. The next forecast valid for 1900 EST and for use between 1600 through 2400 EST are also included.

```
FBUS31 KWN0 101358
FD1US1
- DATA BASED ON 101200Z
VALID 101800Z   FOR USE 1400-2100Z. TEMPS NEG ABV 24000
```

FT	3000	6000	9000	12000	18000	24000	30000	34000	39000
-ATL	2325	2527+12	2428+07	2625+05	2746-10	2749-23	275639	276148	276358
-BNA	2235	2336+11	2539+08	2545+02	2655-12	2662-24	266840	267449	277959
-TYS	2226	2437+11	2440+05	2645+03	2751-13	2656-24	276739	277748	277658
-LOU	2126	2439+10	2538+05	2547-01	2663-13	2784-25	278840	278849	277357
-CVG	2224	2433+09	2540+03	2656-02	2666-15	2670-26	277140	276949	276357
-CRW	2321	2432+07	2642+03	2651-01	2761-15	2773-25	277541	278249	277857

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FBUS33 KWN0 101358
FD3US3
- DATA BASED ON 101200Z
VALID 110000Z   FOR USE 2100-0600Z. TEMPS NEG ABV 24000
```

FT	3000	6000	9000	12000	18000	24000	30000	34000	39000
-ATL	2231	2424+12	2530+07	2531+05	2538-10	2653-23	276639	276348	265958
-BNA	2147	2448+12	2435+10	2539+02	2458-12	2575-25	268340	268849	268257
-TYS	2136	2338+11	2434+08	2536+03	2642-12	2564-24	277341	267749	268158
-LOU	2242	2342+10	2334+08	2452+00	2559-13	2482-25	258241	268349	268757
-CVG	2237	2336+10	2340+05	2453-01	2665-13	2575-24	257443	258151	258857
-CRW	2327	2533+10	2539+04	2540-02	2656-13	2664-24	277242	267950	268358

NWS Inflight Weather advisories – The NWS Aviation Weather Center had no SIGMETs or Convective SIGMETs current over the region at the time of the accident. The NWS Center Weather Service Unit (CWSU) had no Center Weather Advisories (CWA) current for the period over Kentucky. The NWS AWC had a Graphic-AIRMET for IFR conditions and mountain obscuration over the route of flight.

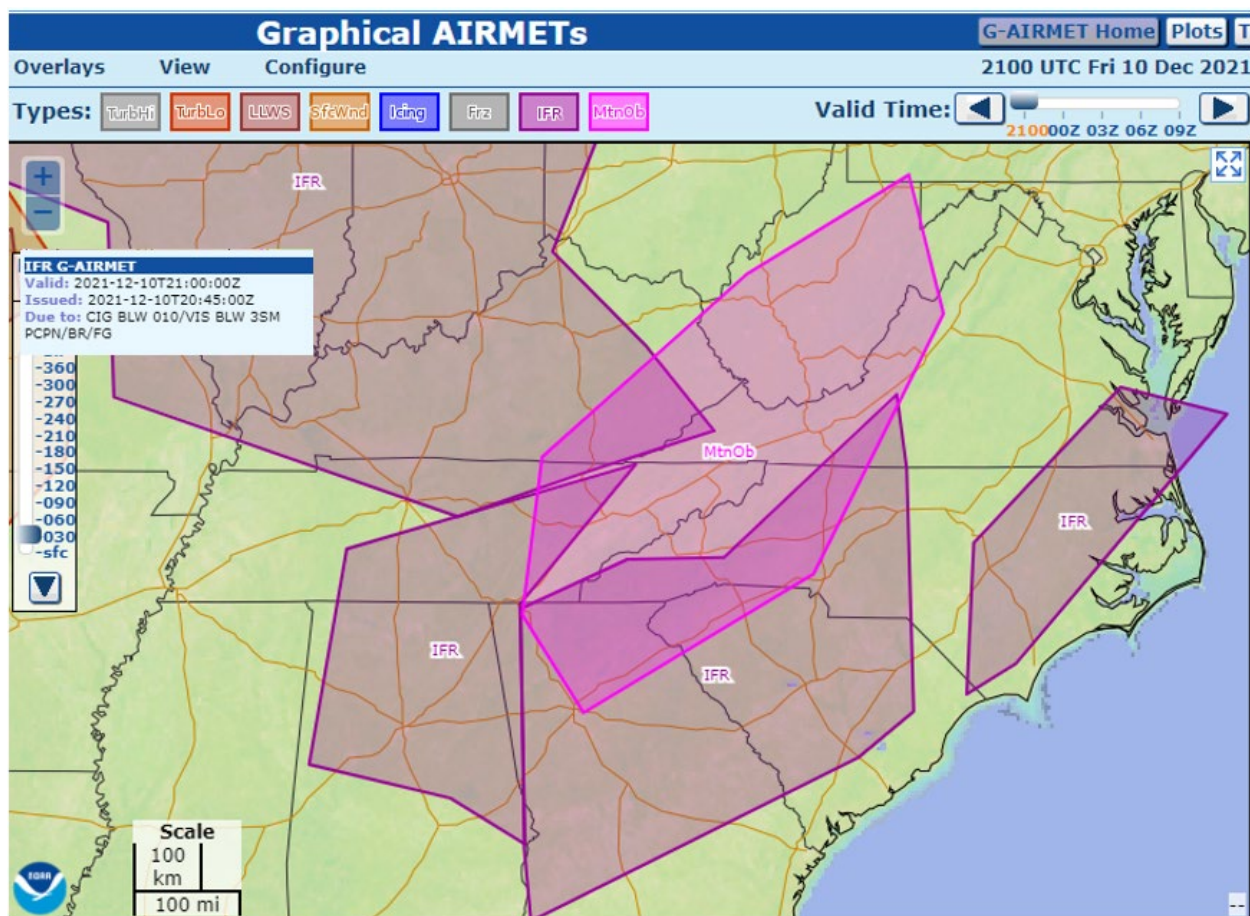


Fig 9

Astronomical Conditions – the United States Naval Observatory astronomical conditions over Danville, KY indicated the following conditions. The time of the accident has been included for reference in bold italic type.

Sun	Time (EST)
Begin civil twilight	0714
Sunrise	0743
Culminative	1232
<i>Accident</i>	<i>1651</i>
Sunset	1720
End civil twilight	1749

At the time of the accident the Sun was approximately 4° above the horizon, at an azimuth of 236°.

Weather Briefing –

Leidos Flight Services and 3rd party vendors utilizing the LFS system had no contact with NN5704V on 12/10/2021. ForeFlight (ticket# 1065750) pilot had an account and had created a route string for the flight. Mr.

Date/Time (UTC) Updated Route String

12/9/2021 19:42:30 KOBE KFIN KBHC KDVK 8500FT

12/9/2021 19:42:28 KOBE KFIN KBHC 8500FT

12/9/2021 19:38:22 KOBE 27.596/-81.532 29.114/-82.265 KBHC KDVK N5704V 8500FT