

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



CEN22FA131

METEOROLOGY

Specialist's Factual Report

February 8, 2023

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A. ACCIDENT

Location: Fostoria, Ohio
Date: February 22, 2022
Time: 2241 eastern standard time
0341 coordinated universal time (UTC) on February 23, 2022
Aircraft: Piper PA-32-360; Registration: N3952W

B. METEOROLOGY INVESTIGATOR

Specialist Donald Eick
National Transportation Safety Board
Washington, DC 20594

C. SUMMARY

On February 22, 2022, about 2241 eastern standard time, a Piper PA32 airplane, N3952W, was destroyed when it was involved in an accident near Fostoria, Ohio. The pilot and passenger were fatally injured. The airplane was operated as a Title 14 Code of Federal Regulations (CFR) Part 91 personal flight. The flight was conducted as an instrument flight rules (IFR) flight from Effingham County Memorial Airport (1H2), Effingham, Illinois, to Findlay Airport (FDY), Findlay, Ohio.

D. DETAILS OF THE INVESTIGATION

The National Transportation Safety Board's Senior Meteorologist was not on scene for this investigation and conducted the meteorology phase of the investigation remotely, collecting data 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 report documents the general weather products and forecasts over the region during the period and the pertinent meteorological parameters related to the accident. All times are reported as eastern standard time (EST) based upon the 24-hour clock, local time is -5 hours from UTC, and UTC=Z. NWS airport and weather 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. Directions are referenced to true north and distances in nautical miles. Heights are in feet (ft) above mean sea level (msl) unless otherwise noted. Visibility is in statute miles and fractions of statute miles.

The accident site was located at latitude 41.14139° N and longitude 83.377247° W at an elevation of approximately 765 ft.

E. FACTUAL INFORMATION

1.0 Synoptic Conditions

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 (NCEP) and the WPC located in College Park, Maryland. These are the base products used in describing weather features and in the creation of forecasts and warnings. Reference to these charts can be found in the Federal Aviation Administration (FAA) "Aviation Weather Handbook", FAA-H-8083-28¹.

1.1 Surface Analysis Chart

The NWS Surface Analysis Chart for 2200 EST centered over Ohio is included as figure 1 with the approximate accident site marked by the red star. The chart depicted a low-pressure system at 1006-hectopascals (hPa) over Canada, with a cold front extending south-southwest across central Ohio, into Kentucky and Tennessee. The accident site was located immediately west of the cold front. The station models depicted a defined wind shift with the front with winds from the SSW ahead (east) of the front at 10 to 15 knots and the wind shifting to the west behind the front with wind magnitudes at 20 knots. Overcast clouds extended over the Ohio area, with temperatures in the 60's degrees Fahrenheit ahead of the front, with temperatures in the 40's to upper 30's °F behind the front.

¹ <https://www.faa.gov/regulationspolicies/handbooksmanuals/aviation/faa-h-8083-28-aviation-weather-handbook>

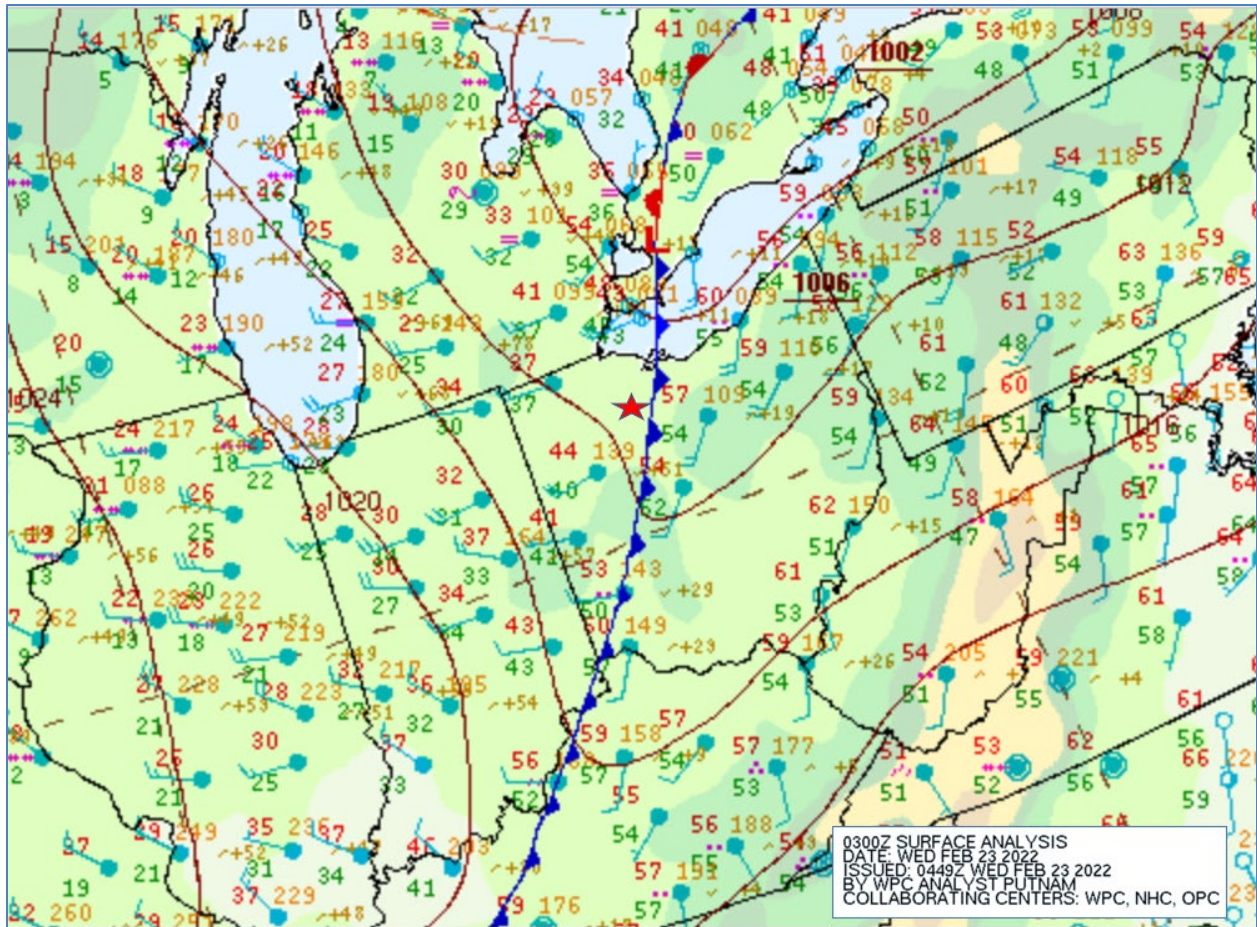


Figure 1 - The NWS Surface Analysis Chart for 2200 EST centered over Ohio with the approximate accident site marked by the red star.

1.2 National Composite Radar Chart

The NWS Multi-Radar Multi-Sensor (MRMS) Composite Reflectivity Mosaic over Ohio for 2242 EST is included as figure 2 with the approximate accident site marked by a red star. The MRMS composite radar image depicted no echoes over the general route of flight or over the accident site. Several small areas of light intensity echoes were located further east and south of the accident site in the vicinity of Cleveland and Columbia, Ohio, and were not a factor.

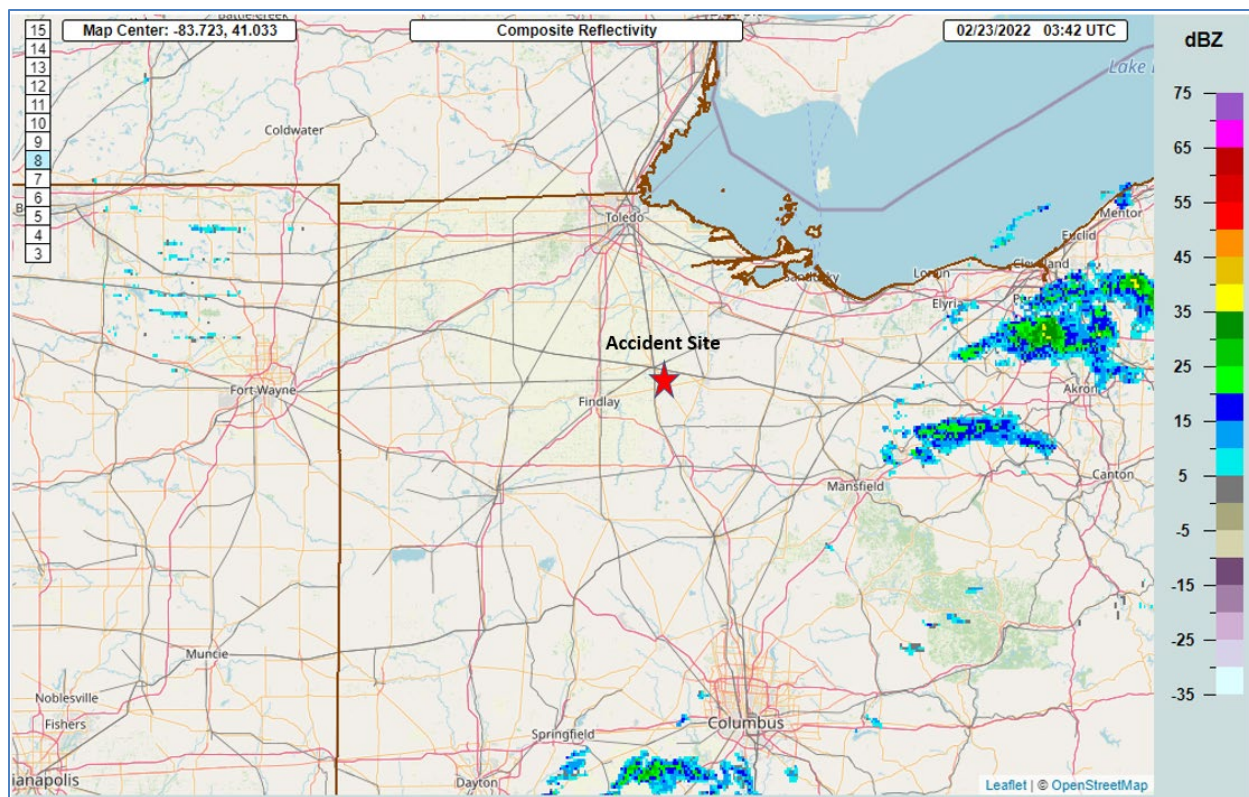


Figure 2 - NWS MRMS Composite Weather Radar image for 2242 EST with the approximate accident site marked by the red star over the area.

1.3 NWS Short Term Forecast

The NWS 6-hour Short Term Forecast valid for 0100 EST is included as figure 3 with the approximate accident site marked by the red star. The forecast chart depicted the cold front moving eastward with rain along and east of the frontal boundary, with some lingering showers behind the front over eastern Ohio. Cold-core high pressure systems at 1048-hPa were depicted over Saskatchewan, Canada, and North Dakota with a ridge to the southeast associated with clearing skies. While another winter storm was developing over southern Nevada with a large band of snow over the southwestern states into Colorado.

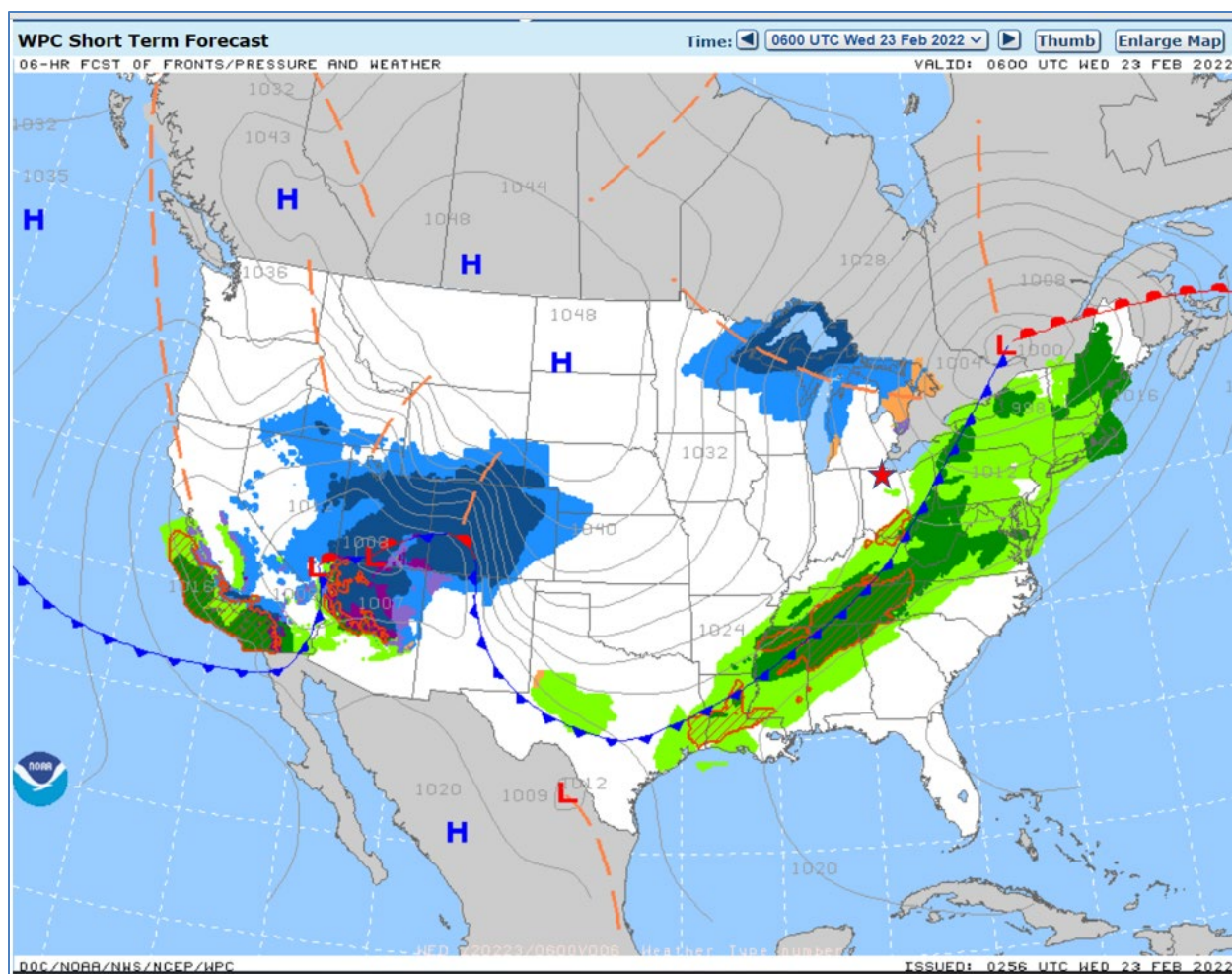


Figure 3 - NWS 6-hour Short Term Forecast valid for 0100 EST on February 23, 2022.

2.0 Observations

The area surrounding the accident site was documented using official Aviation Routine Weather Reports (METAR) and Aviation Selected Special Weather Reports (SPECI). Cloud heights are reported above ground level (agl) in the following section, and the magnetic variation was estimated at 7° west based on the latest sectional chart for the area.

2.1 Fostoria, Ohio

The closest weather reporting location to the accident site was Fostoria Metro Airport (KFZI), Fostoria, Ohio, located 3 miles north of the accident site at an elevation of 752 ft. The airport had an Automated Weather Observation System (AWOS) which

broadcasts locally on very high frequency (VHF) 124.625 and by telephone. No longline observations were disseminated or available for documentation.

2.2 Findlay, Ohio

The next closest weather reporting location was from the planned destination of Findlay Airport (KFDY), Findlay, Ohio, located approximately 15 miles southwest of the accident site at an elevation of 813 ft. The airport had an Automated Surface Observation System (ASOS) whose reports were not augmented by any human observers.

Special weather observation for KFDY at 2239 EST, wind from 270° at 27 knots gusting to 33 knots, visibility 8 statute miles, ceiling broken at 600 ft agl, overcast at 1,100 ft agl, temperature 5° Celsius (C) (41° F), dew point temperature 3° C (37° F), altimeter setting 29.94 inches of mercury (inHg). Remarks: automated station with a precipitation discriminator, peak wind from 270° at 33 knots occurred at 2238 EST, pressure rising rapidly, temperature 5.0° C, dew point temperature 2.8° C.

Accident 2241 EST

Weather observation for KFDY at 2253 EST, automated, wind from 260° at 22 knots gusting to 37 knots, visibility 10 mile, ceiling overcast at 800 ft agl, temperature 4° C (40° F), dew point temperature 2° C (36° F), altimeter setting 29.96 inHg. Remarks: automated station with a precipitation discriminator, peak wind from 260° at 37 knots occurred at 2249 EST, ceiling 500 ft variable 1,200 ft, sea-level pressure 1014.3-hPa, temperature 4.4° C, dew point temperature 2.2° C.

The general flight conditions² and raw longline METAR observations disseminated surrounding the period were as follows. The time of the accident and the observation above are provided in bold italic type.

MVFR SPECI KFDY 222206Z AUTO 23016KT 10SM -RA SCT020 BKN030 OVC034 16/13 A2971 RMK AO2 P0000

² 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.

T01560128=

MVFR SPECI KFDY 222213Z AUTO 23017KT 8SM -RA BKN021 OVC032 16/13 A2972 RMK AO2 P0000 T01560128=

MVFR METAR KFDY 222253Z AUTO 22017G23KT 10SM SCT021 OVC029 15/13 A2973 RMK AO2 RAE33 SLP062 P0001 T01500133=

MVFR METAR KFDY 222353Z AUTO 22017KT 10SM FEW014 BKN021 OVC047 16/13 A2975 RMK AO2 RAB39E48 SLP070 P0000 60003 T01560133 10161 20122 53022=

MVFR SPECI KFDY 230039Z AUTO 22016G22KT 4SM -RA BR BKN014 OVC021 16/13 A2978 RMK AO2 RAB2359E09B33 P0001 T01560133=

MVFR METAR KFDY 230053Z AUTO 23015G20KT 10SM BKN014 BKN019 OVC025 15/13 A2978 RMK AO2 RAB2359E09B33E48 SLP081 P0001 T01500133=

MVFR SPECI KFDY 230112Z AUTO 23014KT 10SM -RA FEW014 BKN021 OVC029 16/13 A2979 RMK AO2 RAB08 P0000 T01560133=

MVFR METAR KFDY 230153Z AUTO 25023G30KT 10SM BKN017 OVC022 12/09 A2983 RMK AO2 PK WND 27037/0124 RAB08E35 SLP098 P0003 T01220089=

MVFR METAR KFDY 230253Z AUTO 26025G31KT 10SM BKN013 OVC026 09/06 A2989 RMK AO2 PK WND 27031/0251 SLP119 60004 T00890056 53044=

IFR SPECI KFDY 230339Z AUTO 27027G33KT 8SM BKN006 OVC011 05/03 A2994 RMK AO2 PK WND 27033/0338 PRESRR T00500028=

Accident 0341Z

IFR METAR KFDY 230353Z AUTO 26022G37KT 10SM OVC008 04/02 A2996 RMK AO2 PK WND 26037/0349 CIG 005V012 SLP143 T00440022=

IFR METAR KFDY 230453Z AUTO 26022G33KT 8SM OVC008 03/01 A3000 RMK AO2 PK WND 26033/0411 CIG 007V012 SLP159 T00280006 401610028=

MVFR SPECI KFDY 230511Z AUTO 27020G30KT 10SM OVC011 03/00 A3001 RMK AO2 PK WND 27030/0505 CIG 007V013 T00280000=

IFR SPECI KFDY 230523Z AUTO 27020G31KT 10SM OVC009 02/00 A3002 RMK AO2 PK WND 27031/0514 CIG 008V013 T00220000=

IFR METAR KFDY 230553Z AUTO 26020G28KT 10SM OVC008 02/M01 A3004 RMK AO2 PK WND 27031/0514 SLP172 60004 T00171006 10156 20017 51050=

The 5-minute ASOS data in standard METAR format recorded surrounding the period were as follows.

METAR KFDY 230300Z AUTO 27024G29KT 10SM BKN011 BKN016 OVC026 07/04 A2990

METAR KFDY 230305Z AUTO 26023G30KT 10SM BKN011 OVC016 07/04 A2990

METAR KFDY 230310Z AUTO 26027G32KT 10SM OVC011 07/04 A2991

METAR KFDY 230315Z AUTO 26021G28KT 10SM OVC010 06/03 A2991

METAR KFDY 230320Z AUTO 26023G29KT 10SM OVC010 06/03 A2992

METAR KFDY 230325Z AUTO 26024KT 10SM OVC010 06/03 A2992

METAR KFDY 230330Z AUTO 26024G31KT 10SM OVC010 06/03 A2993

METAR KFDY 230335Z AUTO 26023KT 9SM BKN008 OVC012 05/03 A2993

*SPECI KFDY 230339Z AUTO 27027G33KT 8SM BKN006 OVC011 05/03 A2994 RMK AO2 PK WND 27033/0338
PRESRR T00500028*

METAR KFDY 230340Z AUTO 27025KT 7SM BKN006 OVC011 05/03 A2994

Accident 0341Z

METAR KFDY 230345Z AUTO 26021G26KT 7SM BKN006 OVC011 05/03 A2995

METAR KFDY 230350Z AUTO 27029G34KT 9SM OVC008 04/02 A2995

*SPECI KFDY 230353Z AUTO 26022G37KT 10SM OVC008 04/02 A2996 RMK AO2 PK WND 26037/0349 CIG
005V012 SLP143 T00440022*

METAR KFDY 230355Z AUTO 26026KT 10SM OVC008 04/02 A2996

METAR KFDY 230400Z AUTO 26022KT 10SM OVC008 04/02 A2996

2.3 METAR Display

The NWS Aviation Weather Center's display of the METARs for 2245 EST is depicted as figure 4 with the approximate accident site marked by the red star. The chart depicted the general flight conditions and METAR data in graphic depiction. The surrounding stations to the accident site reported IFR to MVFR conditions prevailing over the area. The stations depicted westerly winds of 25 to 30 knots gusting to 35 knots, with ceilings overcast between 600 and 900 ft agl.

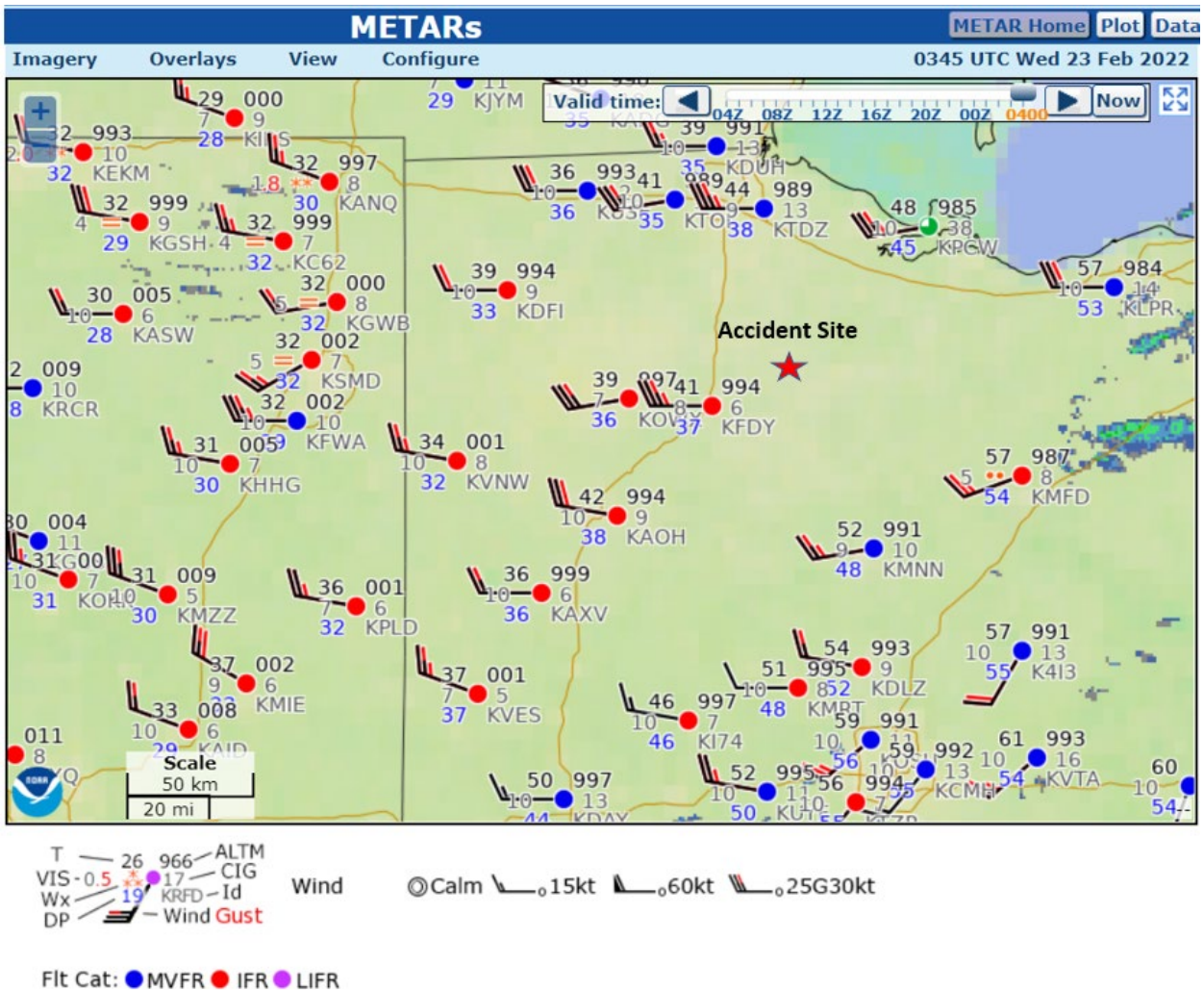


Figure 4 - NWS Aviation Weather Center METAR display for 2245 EST with accident site marked.

3.0 Sounding

A High-Resolution Rapid Refresh (HRRR) numerical model data was obtained from the NOAA Air Resource Laboratory archive using the closest grid point to the accident site coordinates. The HRRR model data was then plotted on a standard skew T log P diagram using the RAOB Analysis software for 2300 EST on February 22, 2022. The diagram is included as figure 5.

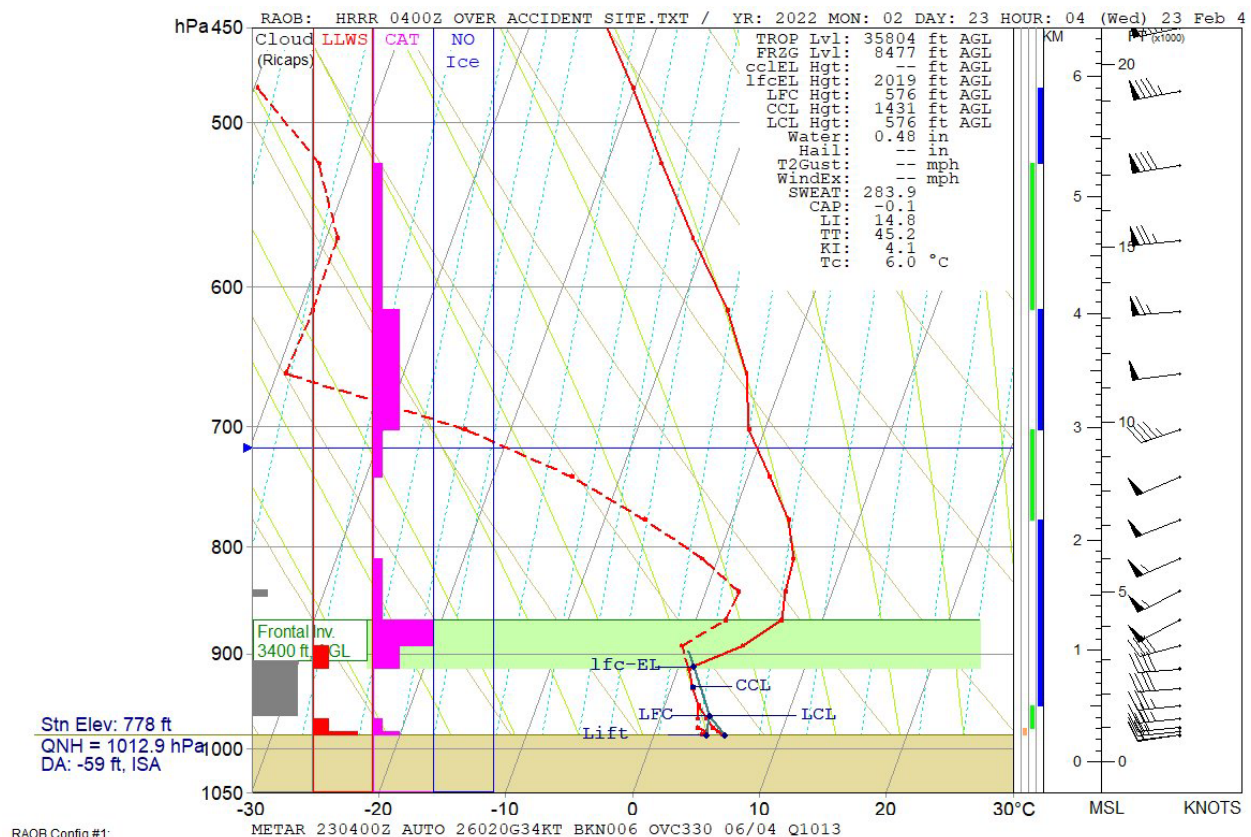


Figure 5 - HRRR numerical model sounding for 2300 EST over the approximate accident site.

The sounding depicted an elevation of 778 ft over the grid point, with a near surface temperature of 5.6°C (42° F), a dew point temperature of 4.2°C (40° F), and a relative humidity of 91%. A frontal temperature inversion was noted from 2,700 ft through 3,400 ft where temperature increased to 6.8 C at about 4,000 ft. The freezing level was identified above 9,000 ft. The lifted condensation level (LCL) and level of free convection (LFC) were identified at 576 ft agl, with the convective condensation level (CCL) at 1,431 ft agl. The precipitable water content was 0.48 inches. The atmosphere was characterized as stable with a Lifted Index of 14.8. The RAOB analysis program support a layer of stratocumulus clouds from the LCL through 4,000 ft msl, with saturated conditions.

The HRRR wind profile indicated a surface wind from 260° at 20 knots with wind backing counterclockwise to the south-southwest above the inversion and then veering or turning clockwise to the west through 10,000 ft with increasing wind speeds with height. A low-level wind maximum was identified at 5,000 ft with wind from 240 at 56 knots. The mean 0 to 6 kilometer (or 18,000 ft) wind was from 260° at 60 knots. The accident airplane enroute cruise was at approximately 7,000 ft where winds were from 245° at 52 knots with a temperature of about 5° C.

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) intensity, Low-Level Wind Shear (LLWS) based on the vertical wind shear, icing potential, and mountain wave activity wavelength, maximum vertical motion, and turbulence potential below 8,000 ft is included below.

Height (ft-msl)	Pres (hPa)	T (C)	Td (C)	RH (%)	Wind (deg/kts)	CAT (FAA)	LLWS Icing (FAA) (USAF)
778	985	5.6	4.2	91	262/ 20		
805	984	5.4	3.8	89	262/ 19	MDT	STRNG
887	981	5.0	4.1	94	264/ 27	LGT	LIGHT
996	977	4.5	3.3	92	264/ 31	LGT	LIGHT
1271	967	3.7	3.0	95	264/ 34		
1659	953	2.7	2.7	100	264/ 36		
2165	935	1.8	1.7	99	265/ 38		
2737	915	0.9	0.9	100	265/ 38	MDT	LIGHT
3414	892	4.5	-0.3	71	254/ 38	XTR	
4178	867	6.8	2.4	73	240/ 52	LGT	
5031	840	6.3	2.6	77	241/ 56	LGT	
6010	810	6.0	-1.2	60	245/ 54		
7160	776	4.5	-6.8	44	247/ 52		
8423	740	1.8	-13.8	30	245/ 51	LGT	

The RAOB analysis program indicated a high probability of moderate-to-severe turbulence between 2,500 ft and 4,000 ft or immediately below the low-level jet maximum and within the stable layer of the inversion.

4.0 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) imagery for 2241 EST at 4X magnification and a standard MB temperature enhancement curve is included as figure 6 with the accident site marked by the white square. The image depicted low clouds with a higher band of cirrus clouds indicated by the red enhanced clouds. The radiative cloud top temperature was 243 Kelvin or -30° C, which corresponded to cloud tops near 24,000 ft based on the HRRR sounding above.

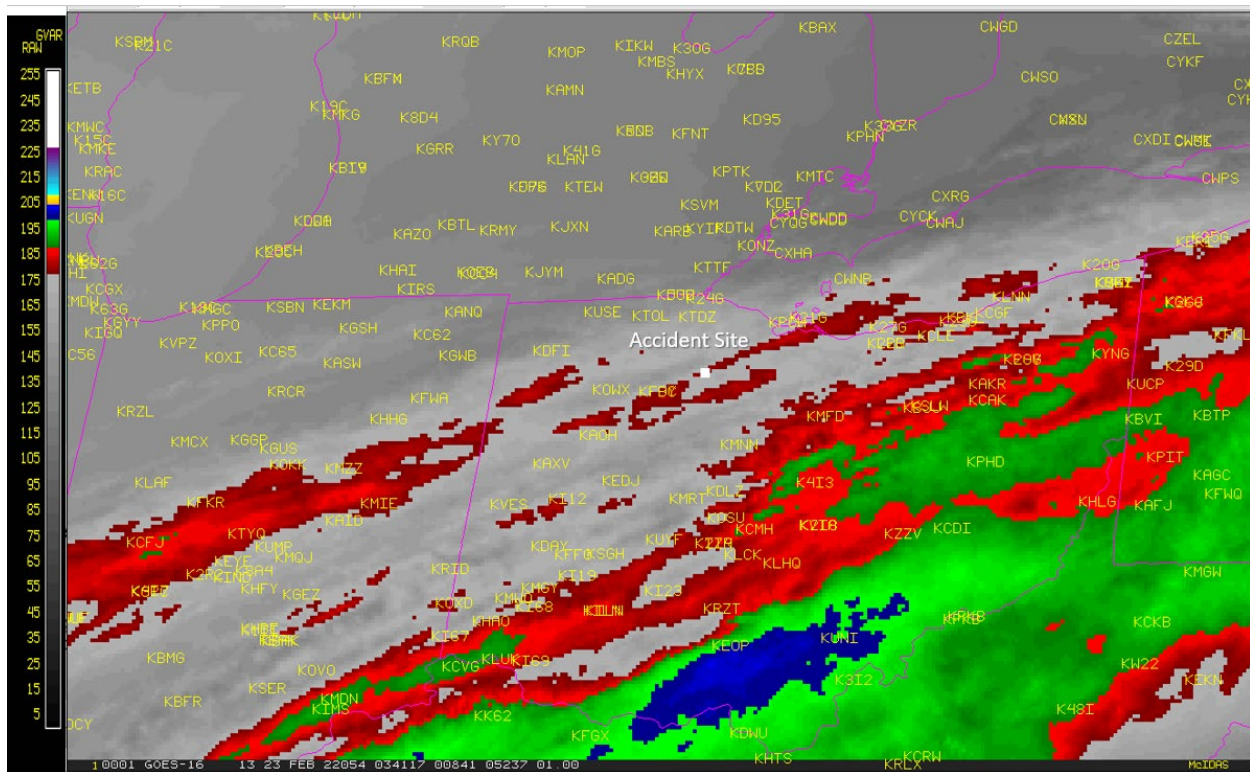


Figure 6 - GOES-16 infrared image 2241 EST at 4X magnification with accident site marked by white square with a standard MB temperature enhancement curve applied.

5.0 Pilot Weather Reports

The following Pilot Weather Reports or PIREPs were reported within 120 miles of the accident site between 1900 and 2400 EDT and below 18,000 ft.

DTW UA /OV DXO270010/TM 0001/FLCLIM/TP CRJ9/TB OCNL LGHT CHOP
 ZZV UA /OV ZZV/TM 0002/FL180/TP E75L /TB MOD CHOP
 CAK UA /OV CAK/TM 0005/FLDURD/TP E120/SK B031/RM LLWS +/-5 DURD RW23
 DTW UA /OV DXO0350005/TM 0009/FL013/TP BCS1/SK OVC013 TOP UNKN/RM DURD RWY 22R
 DAY UA /OV DAY/TM 0012/FLDRGD/TP CRJ9/WV 22635@020/TB LT
 LPR UA /OV KCLE315015 /TM 0022 /FL060 /TP SR22 /SK OVC010-TOP060 /TA 06 /TB LGT /IC NEG
 CLE UA /OV AKR/TM 0040/FL031/TP LJ45/SK BASE OVC 031 TOP OVC070/TA 10/IC NEG/RM DURD
 DAY UA /OV KDAY/TM 0042/FLDURD/TP CRJ9/SK B017
 OSU UA /OV OSU/TM 0046/FL021/TP PC12/SK B021/TB MOD IC/RM DURC
 CAK UA /OV CAK/TM 0047/FLDURD/TP LJ45 /TB -5
 CMH UA /OV OSU/TM 0050/FLDURC/TP PC12/SK B021/TB MOD
 CMH UA /OV CMH/TM 0059/FLDURC/TP B737/SK B022 OVC T029
 CMH UA /OV FFO/TM 0101/FL135/TP CRJ2/TB OCNL LGT CHOP/IC NEG
 DTW UA /OV DXO035005/TM 0103/FL015/TP CRJ2/SK BKN015/IC NEG/RM DURD RWY22R
 NEG LLWS
 CMH UA /OV DAY/TM 0108/FLDURC/TP CRJ9/SK B012 OVC T068/TB LGT - MOD 012-060
 ZZV UA /OV ZZV/TM 0117/FL170/TP C68/TB CONS MOD CHOP
 DTW UA /OV RWY22R/TM 0124/FLA306/TP BASES 007/TB NEG/IC NEG/RM THIN CLOUD
 LAYER @ 025

DTW UA /OV 10 S DXO/TM 0138/FL030/TP A321/SK IMC/TA 13 @ 030/TB LT CHOP
 DAY UA /OV DAY/TM 0145/FLDURD/TP CRJ9/SK B015
 CAK UA /OV CAK/TM 0149/FLDURD/TP CRJ7/SK B023
 CMH UA /OV CMH/TM 0156/FLDRC/TP E170/SK T045
 CMH UA /OV DAY/TM 0206/FLDURD/TP CRJ2/SK B018/TB SMOOTH
 DTW UA /OV DXO035005/TM 0216/FL020/TP B738/SK OVC020/TB LGT CHOP/RM DURD RW 22R
 CAK UA /OV CAK/TM 0221/FLDURD/TP CRJ7/SK B025
 ZZV UA /OV CTW220025/TM 0244/FL190/TP A321/TB MDT TURB 190-180
 CAK UA /OV KCAK/TM 0252/FLDURD/TP E145/SK B025/WV +/- 10KTS/RM RWY 23
 DAY UA /OV DAY/TM 0305/FLDURD/TP CRJ9/SK B022
 DTW UA /OV 22R FINAL/TM 0328/FLDURD/TP B717/WV GUSTY/RM NO ADVERSE WX
 DTW UA /OV 22R FINAL/TM 0340/FLDURD/TP B737/WV +/- 5KT LAST 800FT

Accident 0341Z

DTW UA /OV DXO340017/TM 0349/FL040/TP B717/SK UKN0VC043/TB LIGHT
 DTW UA /OV DXO340007/TM 0401/FL060/TP E175/WX VMC
 DAY UA /OV DAY/TM 0444/FLDURD/TP CRJ2/SK B018
 TOL UA /OV TDZ/TM 0445/FL030/TP C208/SK OVC T040 B022/TA 0/IC LGT RIME 030-022

6.0 NWS Forecasts

6.1 Terminal Aerodrome Forecast

A Terminal Aerodrome Forecast (TAF) is a concise statement of the expected meteorological conditions significant to aviation for a specified time period within 5 statute miles of the center of the airport's runway complex (terminal). The NWS Cleveland (KCLE) Weather Forecast Office (WFO) issued the following TAF during the period for KFDY.

TAF KFDY 222333Z 2300/2324 25015G28KT P6SM -SHRA SCT015 OVC025
FM230300 26018G32KT P6SM BKN008 OVC012
 FM230900 29015G25KT P6SM OVC008
 FM231700 30012G20KT P6SM SCT015 BKN030
 FM232200 34008KT P6SM SCT035 BKN070=

The forecast valid for KFDY from 2200 through 0400 EST on February 23rd expected wind from 260° at 18 knots gusting to 32 knots, visibility better than 6 miles, ceiling broken at 800 ft agl, and overcast at 1,200 ft.

6.2 Area Forecast Discussion

The NWS Aviation Forecast Discussions (AFD) are issued by each WFO to describe the short-term weather conditions within their region with an aviation section that includes the general conditions as they relate to the creation of the TAF. These are useful for additional aviation-related issues that cannot be encoded into the TAF

and provide some reasoning behind the forecast. The KCLE WFO AFD issued at 1906 EST was as follows.

*FXUS61 KCLE 230026
AFDCLE*

*Area Forecast Discussion
National Weather Service Cleveland OH
655 PM EST Tue Feb 22 2022*

.SYNOPSIS...

Low pressure pulls northeast away from the area tonight. Its associated cold front moves east across the area tonight. High pressure over the northern Plains will briefly influence the region Wednesday before another low pressure system develops over the lower Mississippi Valley Wednesday night and tracks across the Ohio Valley Thursday night into Friday. High pressure returns this weekend.

.AVIATION /00Z Wednesday THROUGH Sunday/...

Cold front is moving into NW OH and is expected to sweep across the area overnight. MVFR ceilings are spreading across the entire region with some patchy IFR. IFR ceilings likely arrive in the wake of the cold front. Gusty winds will be the main issue through the night as winds shift to the west or northwest in the wake of the cold front. Gusts of 25 to 30 knots. There still will be a few passing rain showers until the cold front passes but rainfall amounts are expected to be light.

There could be a few snow showers across NE OH into NW PA around sunrise. These could increase a bit over NW PA around mid-morning as the colder air spills across the lake and produces lake effect snow showers.

6.3 Graphic Forecast for Aviation

The NWS Graphic Forecast for Aviation (GFA) is a graphical depiction of surface wind, thunderstorms, precipitation, color coded general flight categories, and cloud cover bases and tops, from graphical output from the NWS's National Digital Forecast Data (NDFD) with the Graphic-Airmen's Meteorological Information (G-AIRMET) for IFR conditions, mountain obscuration, icing conditions, and strong surface wind overlaid. The GFA provides a forecast for the enroute phase of flight and for locations without a TAF. The GFA is available at the NWS AWC website and through other weather briefing services.

The GFA surface and clouds forecast issued at 2001 EST on February 22, 2022, and valid for the period of the accident are depicted as figures 7 and 8. The GFA surface forecast depicted winds from the west to southwest at with gusts to 25 knots, with a G-AIRMET for IFR conditions (pink shade) depicted over all of Ohio. The GFA cloud forecast indicated overcast clouds with bases at 1,600 ft msl with tops to 8,000 ft with cirriform clouds above.

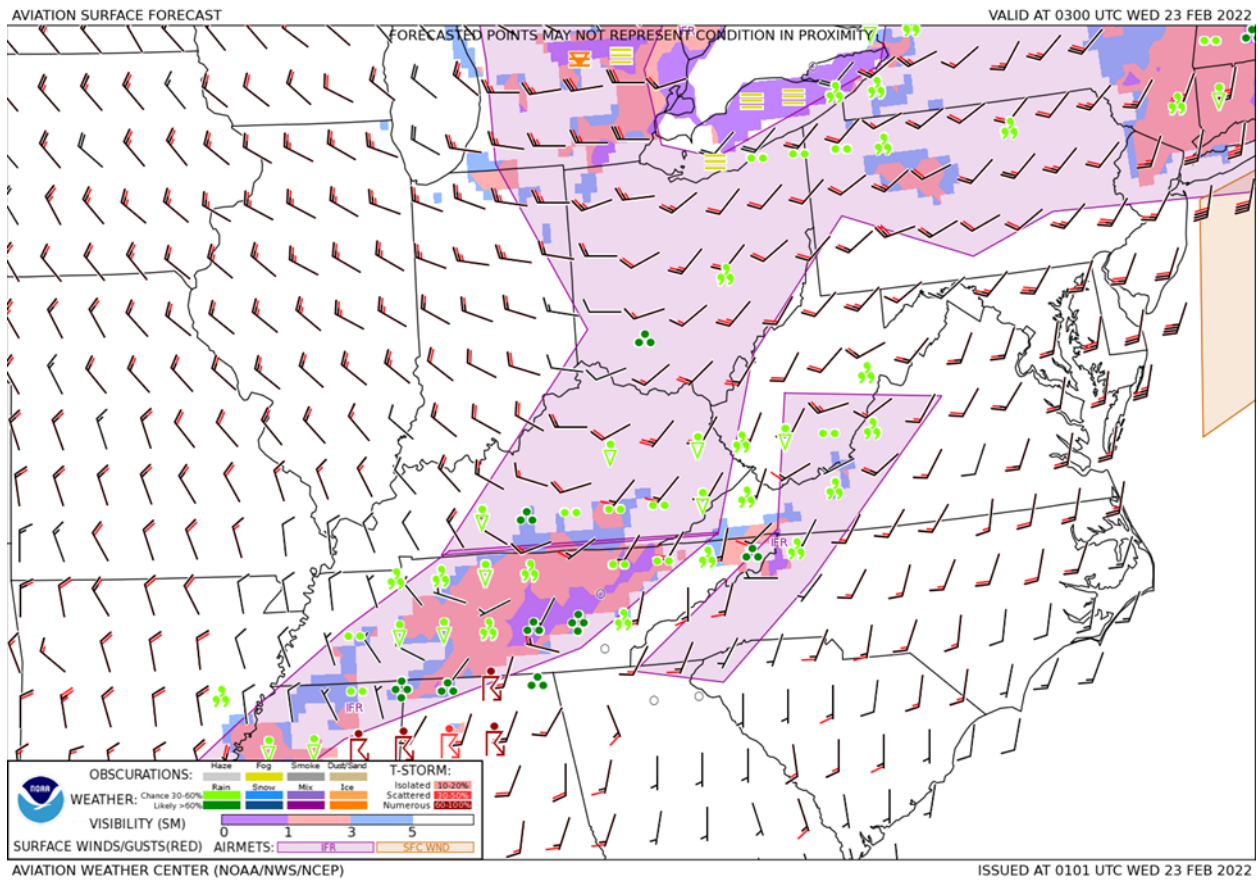


Figure 7 - 3-hour Graphic Forecast for Aviation Surface Forecast issued at about 2000 EST and valid for the period showing expected wind, areas of restricted visibilities, and forecast precipitation, along with any current Graphic-AIRMETs for IFR conditions or strong surface winds.

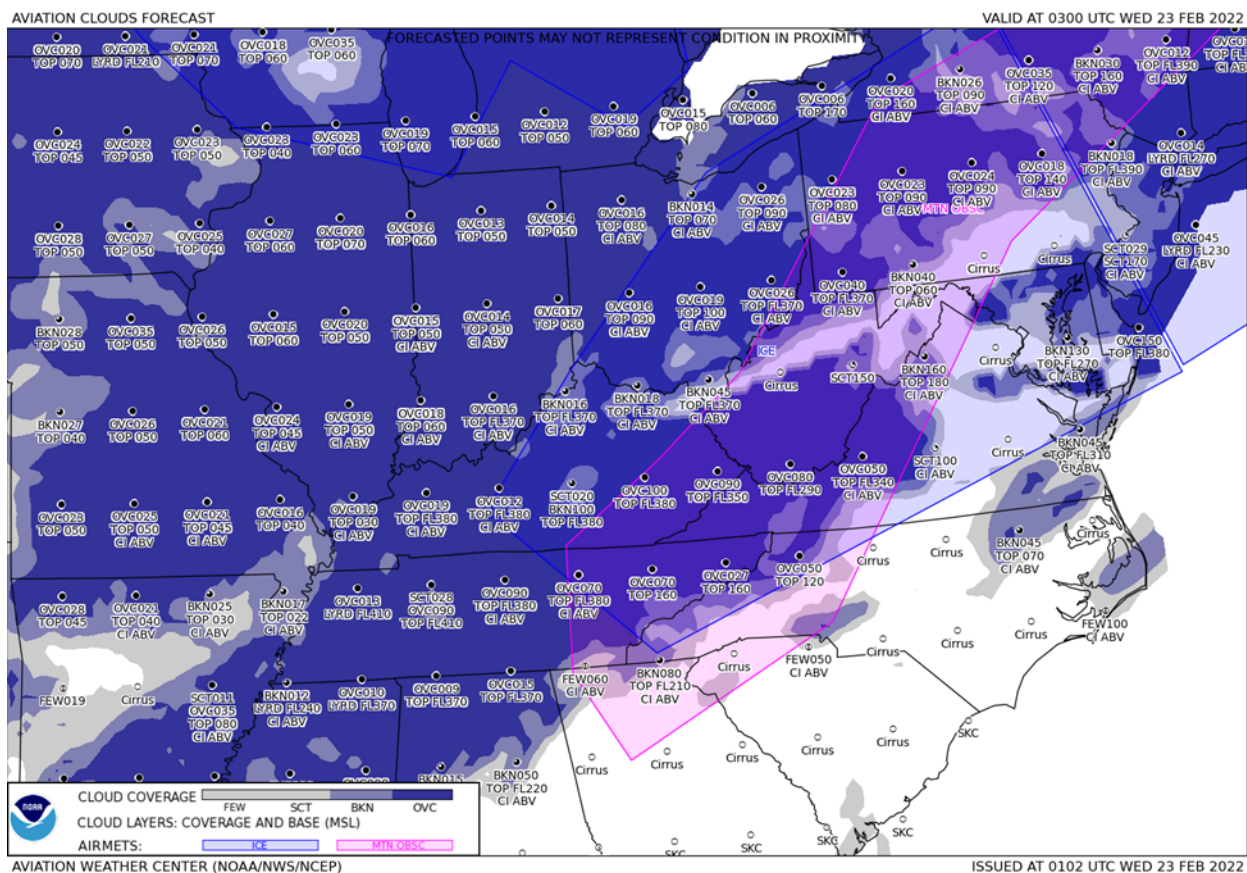


Figure 8 - 3-hour GFA Cloud Forecast issued about 2000 EST depicted the expected cloud cover and cloud tops with the expected G-AIRMETs for moderate icing and mountain obscuration conditions.

6.4 Winds and Temperatures Aloft Forecast

The NWS Winds and Temperature Aloft Forecast current for the period was as follows for the route of flight.

FBUS33 KWNO 221359

FD3US3

DATA BASED ON 221200Z

VALID 230000Z FOR USE 2100-0600Z. TEMPS NEG ABV 24000

FT	3000	6000	9000	12000	18000	24000	30000	34000	39000
IND	2732	2547+06	2547+01	2651-05	2676-17	2596-28	751542	753851	753755
FWA	2641	2555+06	2551+01	2551-07	2683-18	2595-30	741444	753952	753355
CMH	2340	2537+07	2548+02	2649-04	2681-16	7509-26	741641	752651	763659
CLE	2546	2641+07	2652+01	2651-05	2782-16	7502-28	742342	753752	753458

6.5 NWS Inflight Weather Advisories

The NWS issues the primary adverse aviation weather information in the forms of a Significant Meteorological Information (SIGMET), the Convective SIGMET, the Airmen's Meteorological Information (AIRMET) and Center Weather Advisory (CWA). A review of the NWS database indicated that during the period there were no Convective SIGMETs current. The NWS Indianapolis (KZID) Center Weather Service had a previous CWA current until 2139 EST for occasional moderate to isolated severe turbulence from the surface through 18,000 ft for a region south of the route over eastern Kentucky and southern Ohio, into West Virginia. The advisory had expired at the time of the accident. The advisory was as follows.

*FAUS21 KZID 230040
ZID1 CWA 230039
ZID CWA 103 VALID UNTIL 230239
FROM 35W ROD-30NW EKN-20SSE BKW-30SSW LOZ-35ESE PXV-35W ROD
AREA OCNL MOD ISOL SEV TURB NEAR SFC-FL180. MOD-SEV TURB RPTD
BY A BE58 AT 0033Z NEAR CRW FROM SFC-060. IN OH KY WV. CONDS
CONT BYD 0239Z.*

The NWS AWC also had issued SIGMET Whiskey 2 current for high altitude turbulence above 27,000 ft which did not impact the accident airplanes cruising level and was canceled at 2050 EST. The NWS AWC did have several Graphic-AIRMET for IFR conditions depicted in figure 9 and G-AIRMET for turbulence and low-level wind shear in figure 10 current for the route for IFR conditions, moderate turbulence from the surface through 16,000 ft which impacted the destination and were valid over the accident site.

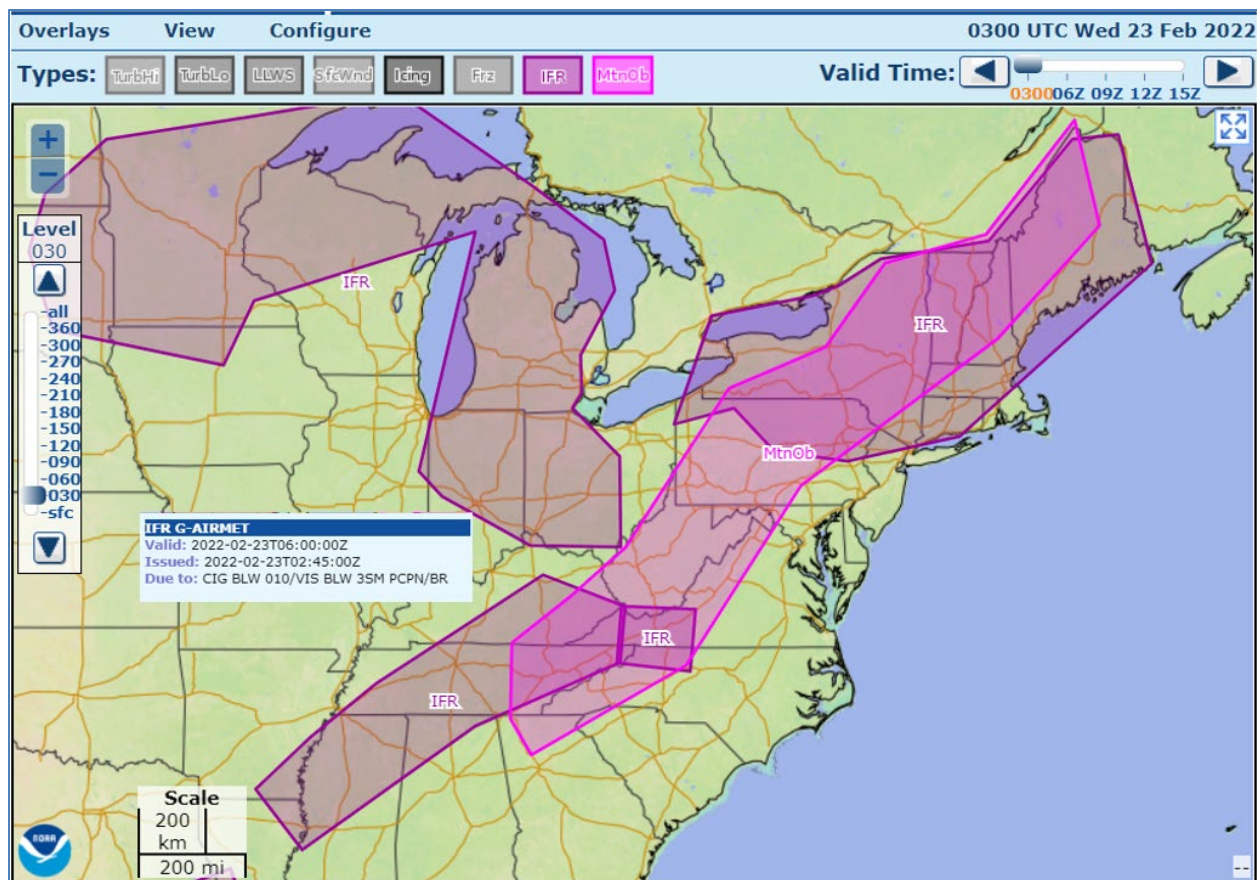


Figure 9 - G-AIRMET for IFR and mountain obscuration conditions valid for the period of the accident.

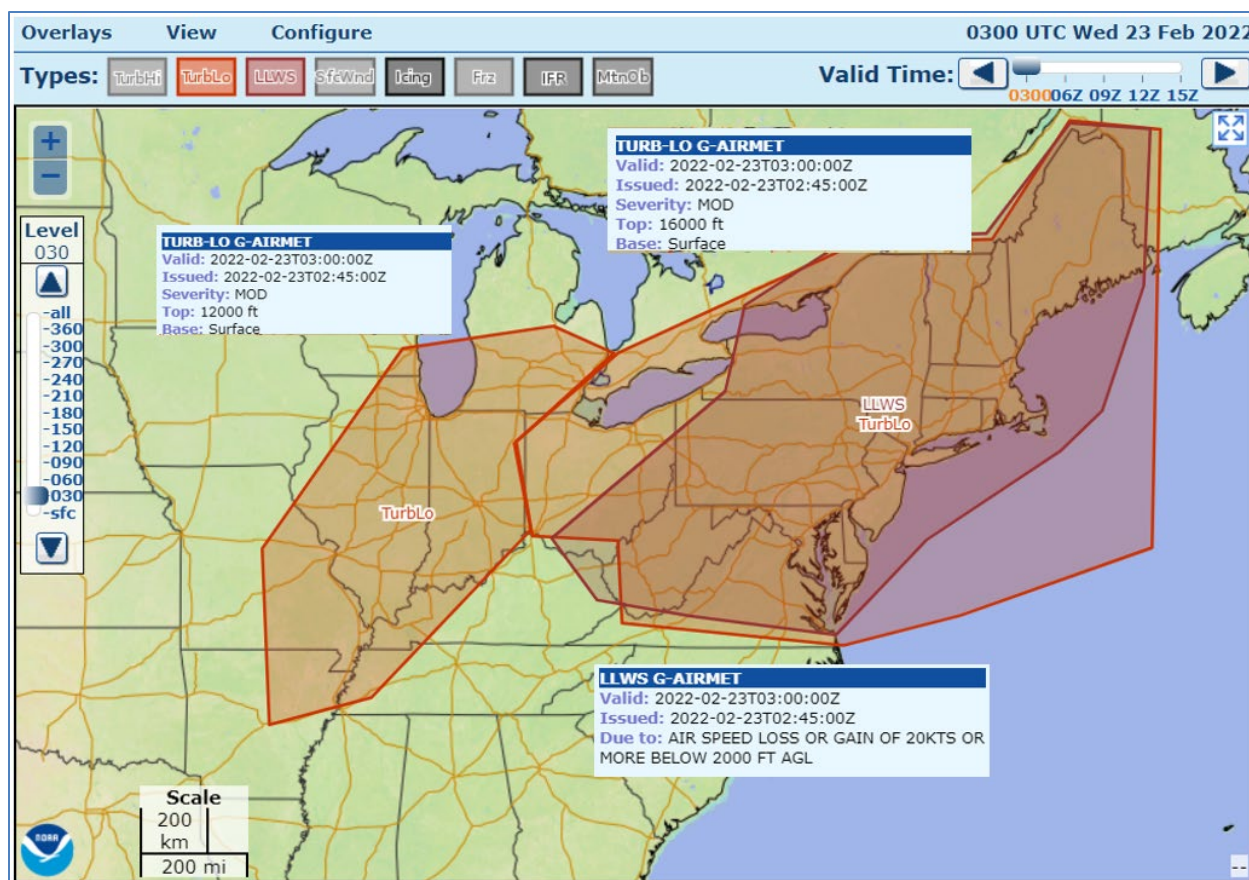


Figure 10 - G-AIRMET current for moderate turbulence over the area at the time of the accident.

7.0 Preflight Weather Briefing

A search of the FAA contract Automated Flight Service Station provider Leidos indicated that they or any of the 3rd party weather vendors utilizing the Lockheed Flight Service (LFS) system had any contact with the pilot of N3952W surrounding the period on February 22, 2022. A search of ForeFlight indicated that the pilot did have an account with the company and created a route briefing between 1H2 and KFDY at 1955 EST, which included the inflight weather advisories, METARs, TAFs, PIREPs, GFAs, winds and temperature aloft forecast, and NOTAMs for the route. See Attachment 1 in the docket for a copy of that briefing.

8.0 Astronomical Conditions

The United States Naval Observatory Multiyear Interactive Computer Almanac (MICA) provided the following astronomical conditions for Findley on February 22, 2022.

<u>Sun</u>	<u>Time (EST)</u>
Dawn	0651
Sunrise	0719
Cumulative	1248
Sunset	1818
Dusk	1845
Accident	2241

<u>Moon</u>	<u>Time</u>
Culmination	0514
Moonset	1025

The accident occurred during official night, with the moon 25° below the horizon at an azimuth of 94°.

Submitted by:

Donald Eick
NTSB Senior Meteorologist