

Meteorological Reports

ERA23LA307

July 21, 2023

Date: July 21, 2023
Time: 1105 EDT; 1505Z
Location: Terra Alta, WV
Coordinates: 39.45754N 79.59404W
Aircraft: Bell 206 Maine Helicopter Inc.; N9913K

Synoptic Conditions

Surface Analysis Chart

The northeast section of the NWS Surface Analysis Chart for 1100 EDT (1500Z) is included as figure 1 with the approximate accident site marked by the red star. The chart depicted a low-pressure system with a central pressure of 1003-hectopascals (hPa) over Quebec associated with an occluded frontal system which extended southward through New York, New Jersey, then southwestward into Maryland, southern West Virginia, into Kentucky and Tennessee. A secondary trough extended behind the front across New York, Pennsylvania, and West Virginia immediately southeast of the accident site. The closest station model to the accident site depicted westerly winds near 5 knots, broken clouds, a temperature of 71° Fahrenheit (F), and a dew point temperature of 63° F.

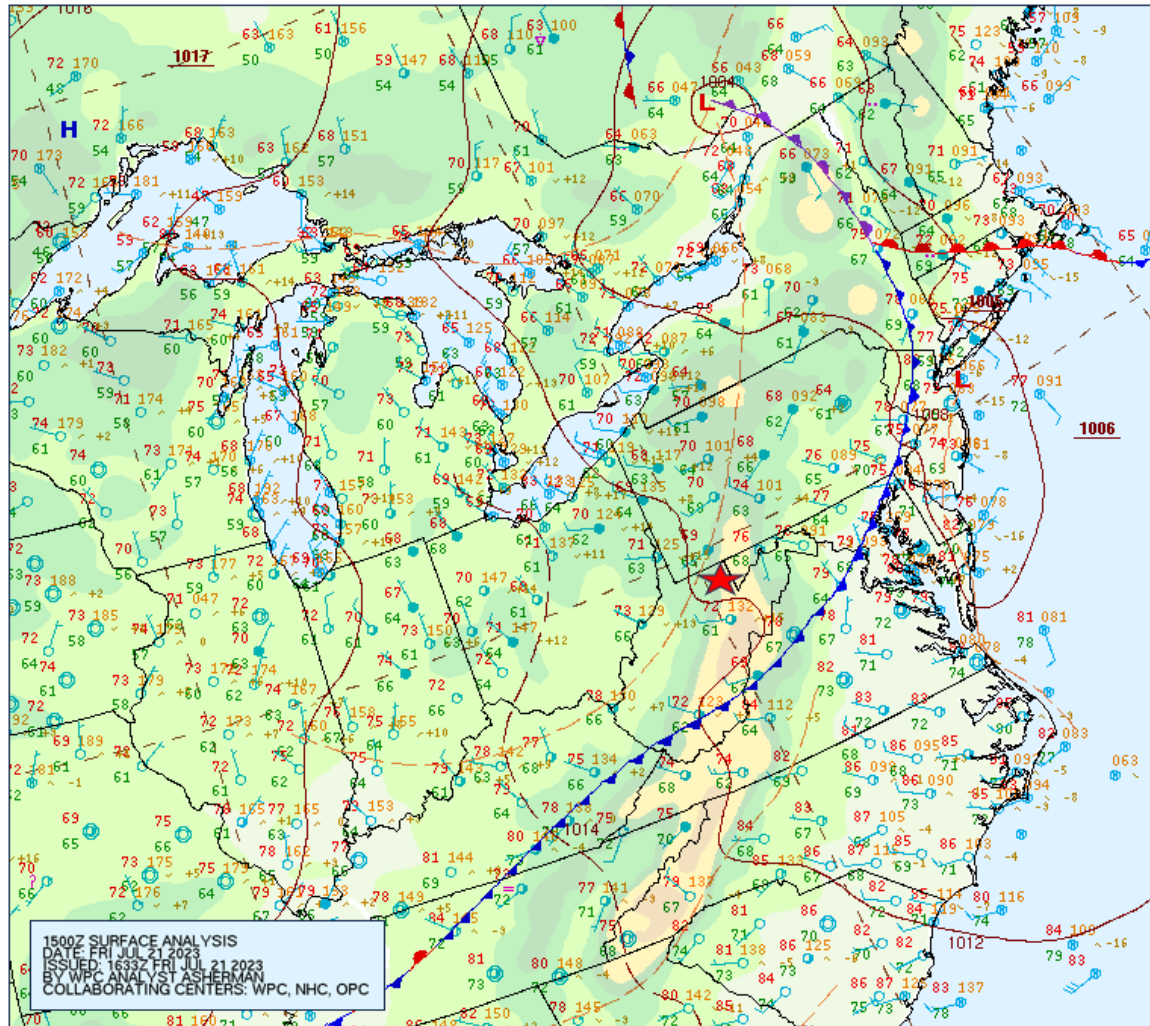


Figure 1 - NWS Surface Analysis Chart for 1100 EDT (1500Z)

Composite Radar Image

The northeast section of the NWS National Composite Radar Image for 1105 EDT (1505Z) is included as figure 2, with the approximate accident site noted by the red star. The image depicted scattered areas of echoes of 30 to 40 dBZ scattered over Pennsylvania and West Virginia, with no significant meteorological echoes identified over the accident site.

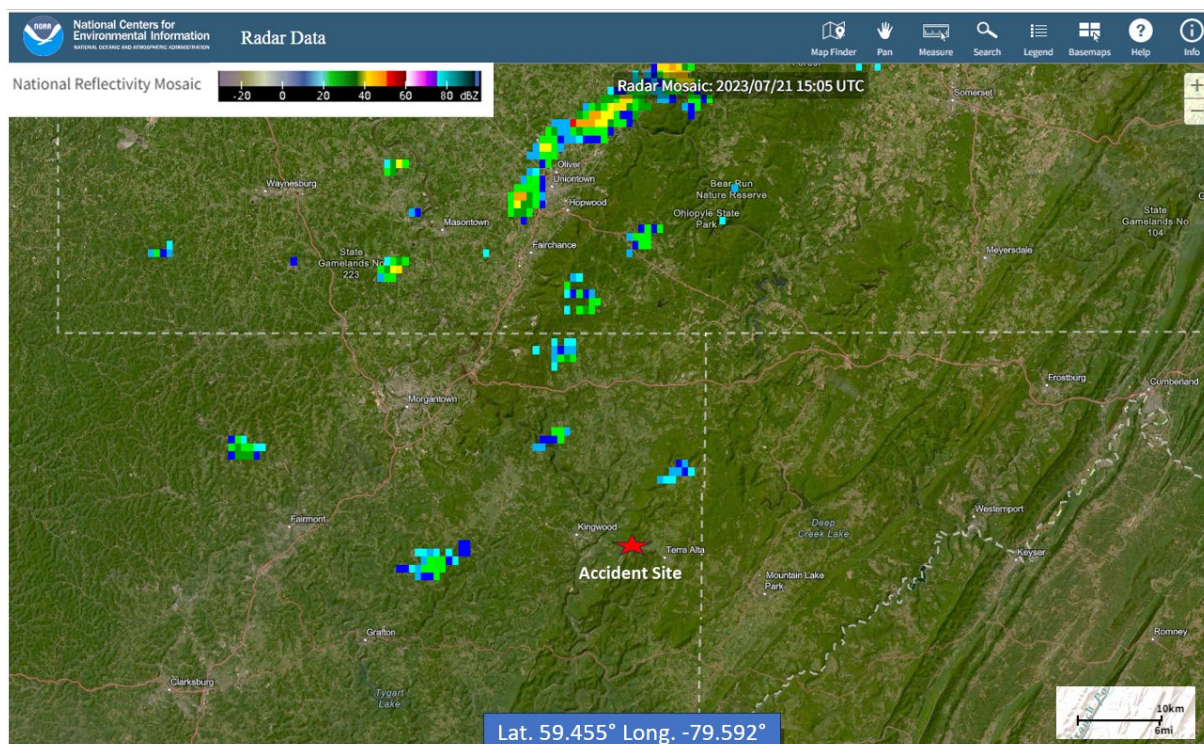


Figure 2 - Regional Composite Radar Image for 1105 EDT (1505Z)

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 8° west based on the latest sectional chart for the area.

Oakland, MD

The closest weather reporting facility was from Garrett County Airport (K2G4), Oakland, Maryland, located about 16 miles northeast of the accident site at an elevation of 2,933 ft. The airport had an Automated Weather Observation System (AWOS), which was not augmented by an observer and issued observation every 20-minutes longline. The following conditions general flight categories and conditions were reported surrounding the time of the accident:

LIFR METAR K2G4 211145Z AUTO VRB06G13KT 3/4SM BR OVC002 16/16 A2991 RMK AO2=
LIFR METAR K2G4 211205Z AUTO 27007G15KT 250V310 M1/4SM FG OVC002 16/16 A2992 RMK AO2=
LIFR METAR K2G4 211225Z AUTO VRB05G13KT M1/4SM FG OVC002 16/16 A2993 RMK AO2=
LIFR METAR K2G4 211245Z AUTO 27008KT 240V300 M1/4SM FG OVC002 16/16 A2993 RMK AO2=
LIFR METAR K2G4 211305Z AUTO 28007G13KT 250V320 M1/4SM FG OVC002 16/16 A2993 RMK AO2=
LIFR METAR K2G4 211325Z AUTO 28009KT 240V300 M1/4SM FG OVC002 16/16 A2994 RMK AO2=
LIFR METAR K2G4 211345Z AUTO 28007G13KT 230V320 2SM BR OVC002 16/16 A2994 RMK AO2 VIS 1 1/4V5=
LIFR METAR K2G4 211405Z AUTO VRB06G11KT 5SM BR BKN003 OVC016 17/17 A2994 RMK AO2=
LIFR METAR K2G4 211425Z AUTO 30005G11KT 7SM BKN004 BKN009 BKN016 17/16 A2995 RMK AO2=
IFR METAR K2G4 211445Z AUTO VRB06G12KT 9SM BKN006 BKN011 BKN017 18/17 A2996 RMK AO2=
MVFR METAR K2G4 211505Z AUTO VRB06G13KT 10SM FEW006 BKN011 BKN023 18/17 A2996 RMK AO2=
Accident 1505Z
MVFR METAR K2G4 211525Z AUTO VRB05G13KT 10SM SCT012 BKN017 SCT036 19/17 A2996 RMK AO2=

MVFR METAR K2G4 211545Z AUTO VRB06KT 10SM BKN011 BKN015 BKN036 19/16 A2996 RMK AO2=
VFR METAR K2G4 211605Z AUTO 28007G12KT 10SM SCT012 SCT040 BKN055 19/16 A2996 RMK AO2=
VFR METAR K2G4 211625Z AUTO 29012KT 250V330 10SM SCT014 SCT032 BKN047 20/16 A2996 RMK AO2=
VFR METAR K2G4 211645Z AUTO 30007G15KT 280V340 10SM SCT017 SCT032 BKN045 20/16 A2996 RMK AO2=
VFR METAR K2G4 211705Z AUTO 30007G16KT 250V360 10SM SCT014 BKN021 BKN040 19/16 A2996 RMK AO2=

The decoded observation surrounding the time of the accident were as follows:

K2G4 weather observation at 1105 EDT, automated, wind variable at 6 knots gusting to 13 knots, visibility 10 miles or more, a few clouds at 600 ft agl, ceiling broken at 1,100 ft, broken at 2,300 ft, temperature 18° C, dew point temperature 17° C, altimeter 29.96 inches of mercury (inHg).

Morgantown, WV

The next closest weather reporting facility was from the departure point of Morgantown Municipal Airport/Walter L Bill Hart Field (KMGW), Morgantown, West Virginia, located 21.5 miles northwest of the accident site at an elevation of 1,244 ft. The airport had an Automated Surface Observation System (ASOS) which was augmented by tower personnel during normal operating hours. The following conditions were reported at the time of the accident.

IFR METAR KMGW 211153Z 21003KT 3SM BR OVC006 19/18 A2989 RMK AO2 CIG 002V008 SLP111 60000
 70082 T01890178 10189 20178 53016=
MVFR SPECI KMGW 211246Z 18004KT 6SM BR FEW004 FEW008 OVC025 20/18 A2989 RMK AO2 T02000183=
MVFR METAR KMGW 211253Z VRB03KT 6SM BR SCT004 OVC025 20/18 A2989 RMK AO2 SLP111 T02000183=
MVFR SPECI KMGW 211305Z 20003KT 8SM SCT005 BKN013 OVC025 21/19 A2989 RMK AO2 T02060189=
MVFR METAR KMGW 211353Z 00000KT 10SM BKN013 OVC020 21/19 A2990 RMK AO2 RAB37E50 SLP114 P0000
 T02060189=
MVFR SPECI KMGW 211403Z 00000KT 10SM SCT009 OVC013 21/19 A2990 RMK AO2 T02110189=
VFR SPECI KMGW 211445Z VRB04KT 10SM SCT016 23/19 A2991 RMK AO2 T02330189=
VFR METAR KMGW 211453Z 21004KT 10SM FEW012 SCT016 BKN039 24/19 A2991 RMK AO2 SLP117 60000
 T02390189 53007=

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MVFR SPECI KMGW 211508Z 00000KT 10SM SCT020 BKN026 BKN039 23/18 A2991 RMK AO2 T02280183=
VFR SPECI KMGW 211538Z 31008KT 280V340 10SM SCT023 BKN070 OVC080 24/18 A2991 RMK AO2
 T02440178=
VFR METAR KMGW 211553Z 31005G15KT 10SM FEW025 BKN070 OVC080 23/18 A2992 RMK AO2 SLP121
 T02330178=
VFR METAR KMGW 211653Z 28006KT 10SM BKN070 25/17 A2991 RMK AO2 SLP119 T02500167=

The decoded observation surrounding the time of the accident were as follows:

KMGW special weather observation at 1108 EDT, wind calm, visibility 10 miles or more, scattered clouds at 2,000 ft agl, ceiling broken at 2,600 ft, broken at 3,900 ft, temperature 23° C, dew point temperature 18° C, altimeter 29.91 inHg.

KMGW special weather observation at 1138 EDT, wind from 310° at 8 knots, visibility 10 miles or more, scattered clouds at 2,300 ft agl, ceiling broken at 7,000 ft, overcast at 8,000 ft, temperature 24° C, dew point temperature 18° C, altimeter 29.91 inHg.

The **Terminal Aerodrome Forecast (TAF)** issued for KMGW during the period were as follows. A TAF is valid for a 5 statute mile radius of the airports center point.

TAF KMGW 211120Z 2112/2212 24004KT P6SM SCT015
TEMPO 2112/2114 BKN004
FM211400 28006KT P6SM SCT015 BKN030
FM211700 30008G16KT P6SM BKN050
FM220000 32003KT P6SM SCT050=

AMD TAF KMGW 211319Z 2113/2212 24004KT P6SM SCT015
TEMPO 2113/2114 BKN015
FM211400 28006KT P6SM SCT015 BKN030
FM211700 30008G16KT P6SM BKN050
FM220000 32003KT P6SM SCT050=

Clarksburg, WV

The next closest was from North Central West Virginia Airport (KCKB), Clarksburg, West Virginia, located about 36 miles west-southwest at an elevation of 1,224 ft. The airport also had an AWOS and was augmented by tower personnel during normal operating hours.

IFR SPECI KCKB 211118Z 27005KT 10SM OVC005 19/18 A2987 RMK AO2 T01940178=
MVFR METAR KCKB 211153Z 26003KT 10SM FEW006 OVC013 19/18 A2988 RMK AO2 SLP102 60001 70092
T01940183 10194 20172 53011=
MVFR METAR KCKB 211253Z 21004KT 10SM BKN016 OVC023 21/19 A2990 RMK AO2 SLP108 T02060189=
MVFR SPECI KCKB 211303Z 23005KT 10SM BKN014 OVC021 21/19 A2990 RMK AO2 T02060189=
MVFR SPECI KCKB 211312Z 23005KT 10SM FEW012 BKN017 OVC022 21/18 A2990 RMK AO2 T02060183=
MVFR SPECI KCKB 211321Z 23005KT 10SM BKN014 OVC022 21/19 A2990 RMK AO2 T02060189=
MVFR METAR KCKB 211353Z 25006KT 10SM BKN014 OVC022 22/18 A2990 RMK AO2 SLP109 T02170183=
MVFR SPECI KCKB 211400Z 23006KT 10SM SCT013 BKN022 22/18 A2990 RMK AO2 T02170183=
MVFR **METAR KCKB 211453Z 24007KT 10SM SCT015 BKN027 BKN060 22/18 A2992 RMK AO2 SLP117
T02220183 53013=**

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MVFR METAR KCKB 211553Z 26009KT 10SM SCT018 BKN028 BKN060 24/18 A2992 RMK AO2 SLP117
T02390178=
MVFR METAR KCKB 211653Z 28007KT 10SM SCT018 BKN026 BKN060 24/17 A2991 RMK AO2 SLP114
T02440167=
VFR SPECI KCKB 211700Z 28008KT 10SM SCT029 BKN075 25/17 A2991 RMK AO2 T02500172=
MVFR SPECI KCKB 211711Z 27008KT 10SM SCT018 BKN026 BKN060 24/17 A2991 RMK AO2 T02440167=

Sounding – A High-Resolution Rapid Refresh (HRRR) numerical model for 1100 EDT was obtained from the NOAA Air Resource laboratory for the closest grid point to the accident site. The data was then plotted on a standard Skew T log P diagram from the surface to 500-hPa using the RAOB Analysis software and is included as figure 3.

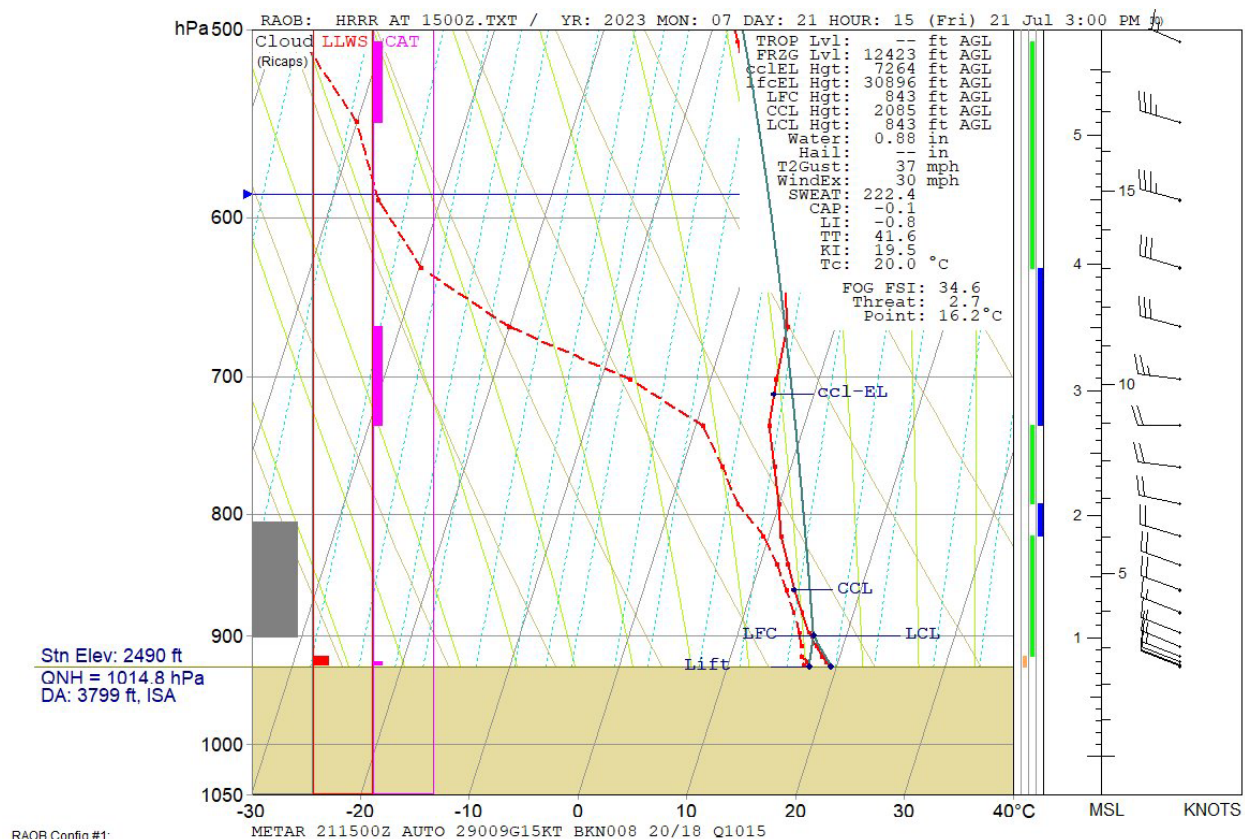


Figure 3 – HRRR sounding for 1100 EDT

The 1100 EDT HRRR sounding depicted an elevation of 2,490 ft at the nearest grid point to the accident site with a near surface temperature 20° C (68° F), a dew point temperature of 18° C (64° F), with a relative humidity of 82%, with a density altitude of about 3,800 ft. The RAOB analysis program depicted a lifted conditions level (LCL) and level of free convection (LFC) at 843 ft agl, with the convective condensation level (CCL) at 2,800 ft agl, with broken clouds from the LCL to about 6,000 ft. The atmosphere was characterized as conditional unstable with a Lifted Index of -0.8, and a convective available potential energy of 376 Joules per kilogram (J/kg). The precipitable water content was 0.88 inches, and the freezing level was identified above 12,400 ft, and no structural icing conditions existed. The wind profile indicated a **surface wind from 290° at 9 knots with potential gusts to 15 knots**. There was little variation in wind direction with height with gradual increase in wind speeds with height. The mean 0 to 6 kilometer or 18,000 ft wind was from 290° at 29 knots. The sounding supported several shallow layers of light turbulence below 10,000 ft.

A table of the HRRR sounding parameters of height, pressure (Pres), temperature (T), dew point temperature (Td), relative humidity (RH), wind direction and speed, Clear Air Turbulence (CAT), Low-Level Wind Shear (LLWS) potential below 10,000 were as follows.

Height (ft msl)	Pres (hPa)	T (°C)	Td (°C)	RH (%)	Wind (dir kts)	CAT (FAA)	LLWS (FAA)
2490	927	19.5	17.5	88	290/ 9		
2521	926	19.3	17.0	87	290/ 8	LGT	LIGHT
2613	923	18.9	17.2	90	290/ 11		LIGHT

LGT
LGT

[illegible]

Figure 4 - GOES-16 infrared image for 1106 EDT at 4X magnification with accident site

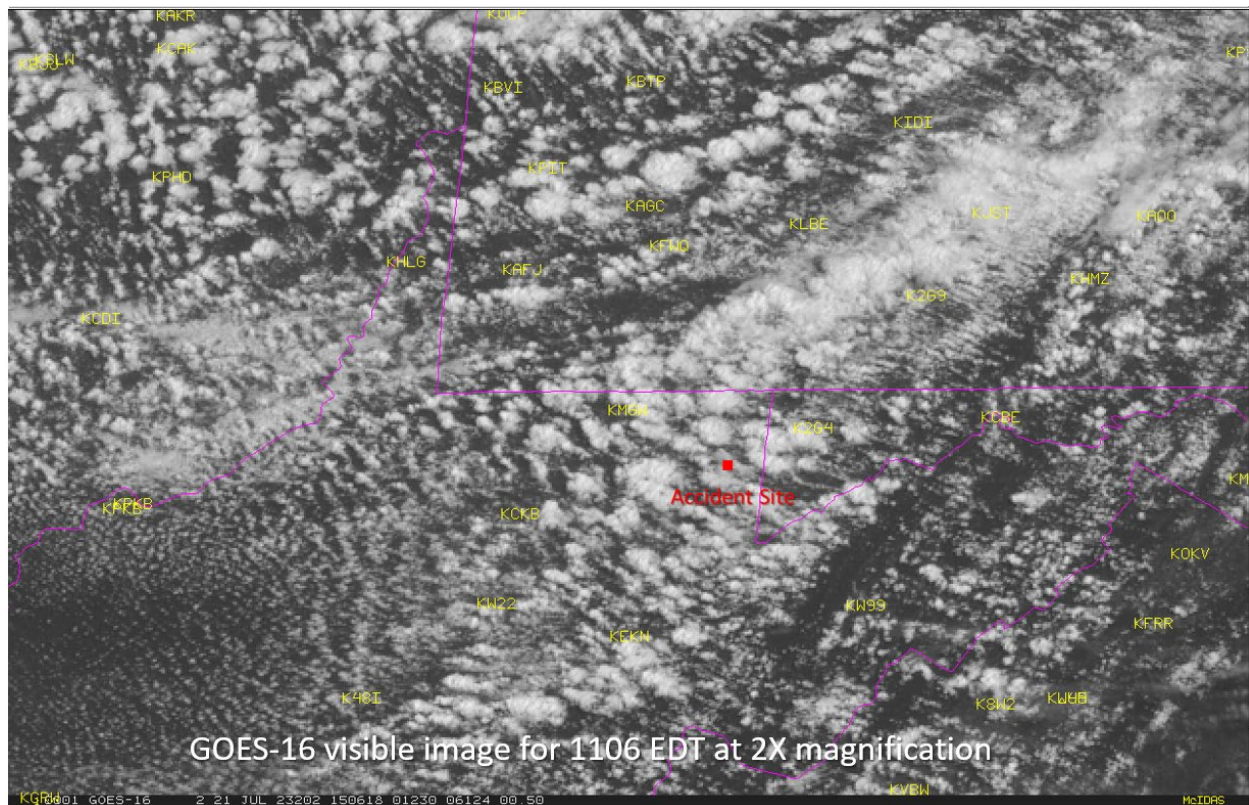


Figure 5- GOES-16 Visible image for 1106EDT (1506) at 2X magnification.

Weather Radar Imagery – The closest NWS Pittsburgh, PA, Weather Surveillance Radar – 1988 Doppler (WSR-88) was located about 70 miles north. The lowest 0.5° base reflectivity image for 1103 EDT is included as figure 6 and continued to depict no significant echoes over the accident site, but with several scattered echoes approaching 30 dBZ to the west, northwest, and north-northeast of the accident site.

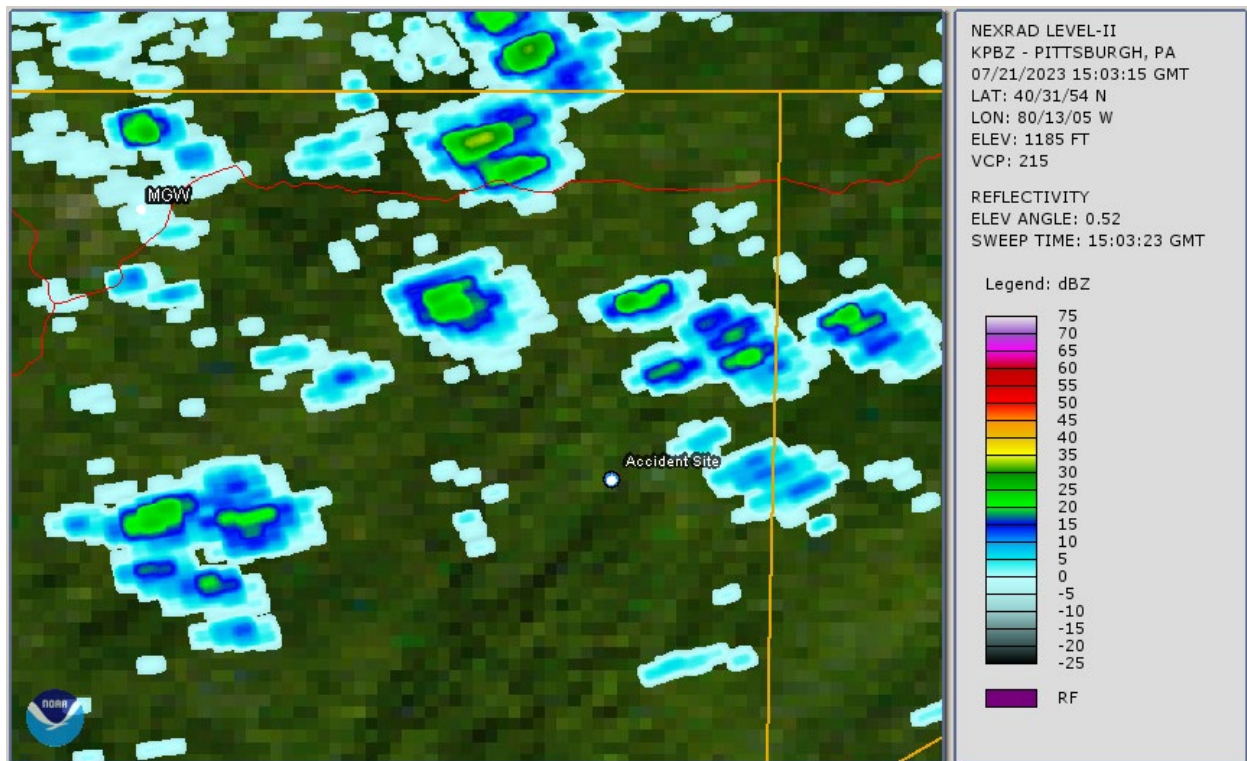


Figure 6 - KPBZ WSR-88D 0.5° base reflectivity image for 1103 EDT.

Pilot Reports - A review of the pilot reports (PIREPs) that was available in the National database surrounding the period below 12,000 ft provided a single report within 60 miles of the accident site.

MRB UUA /OV KMRB225003/TM 1502/FL016/TP C172/SK FEW042 SCR065 BKN080/WX 10/TA 27/WV 290/12G18/TB MOD-SEV/IC NON/RM C172 REPORTED 50 FOOT LOSS OF ALT AT 1600/ 3NM SW OF AIRPORT/ MOD TO SEVERE TURB WITH LIGHT CHOP REPORTED AFTERWARDS.

NWS Forecast – The Graphic Forecast for Aviation (GFA) forecast for enroute clouds and surface conditions issued at about 0900 EDT and valid for 1100 EST are included as figures 7 and 8, the Graphic-AIRMETs for mountain obscuration are overlaid. The GFA Cloud Forecast expected broken to overcast clouds at 2,000 ft msl with tops to 8,000 ft over the area, while the Surface Forecast depicted surface winds from the west at 10 to 15 knots with a chance or 30% to 60% probability of rain showers.

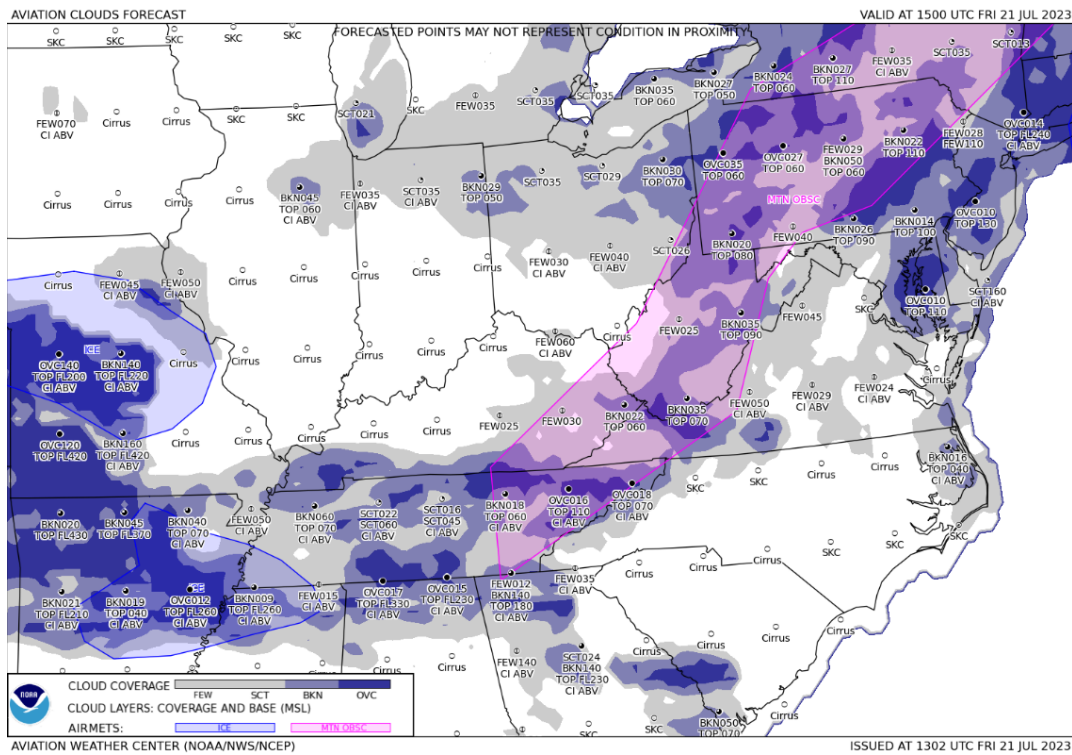


Figure 7 – GFA3-hour Cloud Forecast valid for 1100 EDT (1500Z)

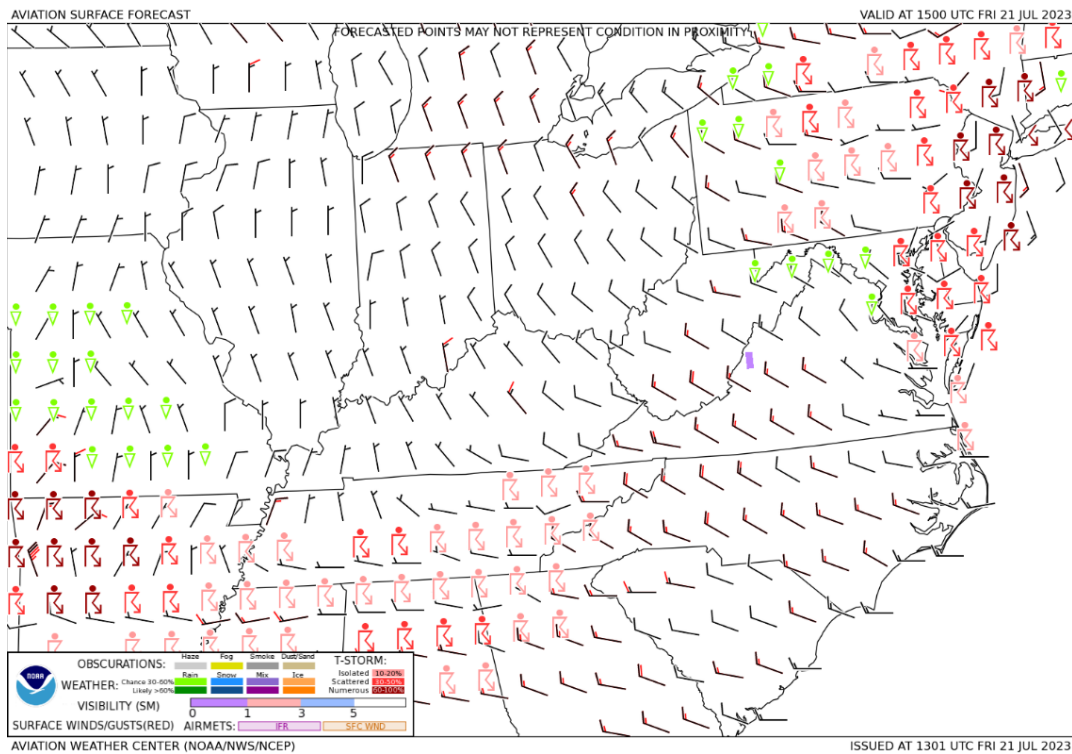


Figure 8 - GFA 3-hour Surface forecast valid for 1100 EDT (1500Z)

Inflight Weather Advisories— The NWS Aviation Weather Center had two Graphic-AIRMETs current for the area of the accident site. An advisory for mountain obscuration in precipitation, clouds, and mist, and another one for occasional moderate turbulence below 7,000 ft. Both advisories are depicted in figure 9.

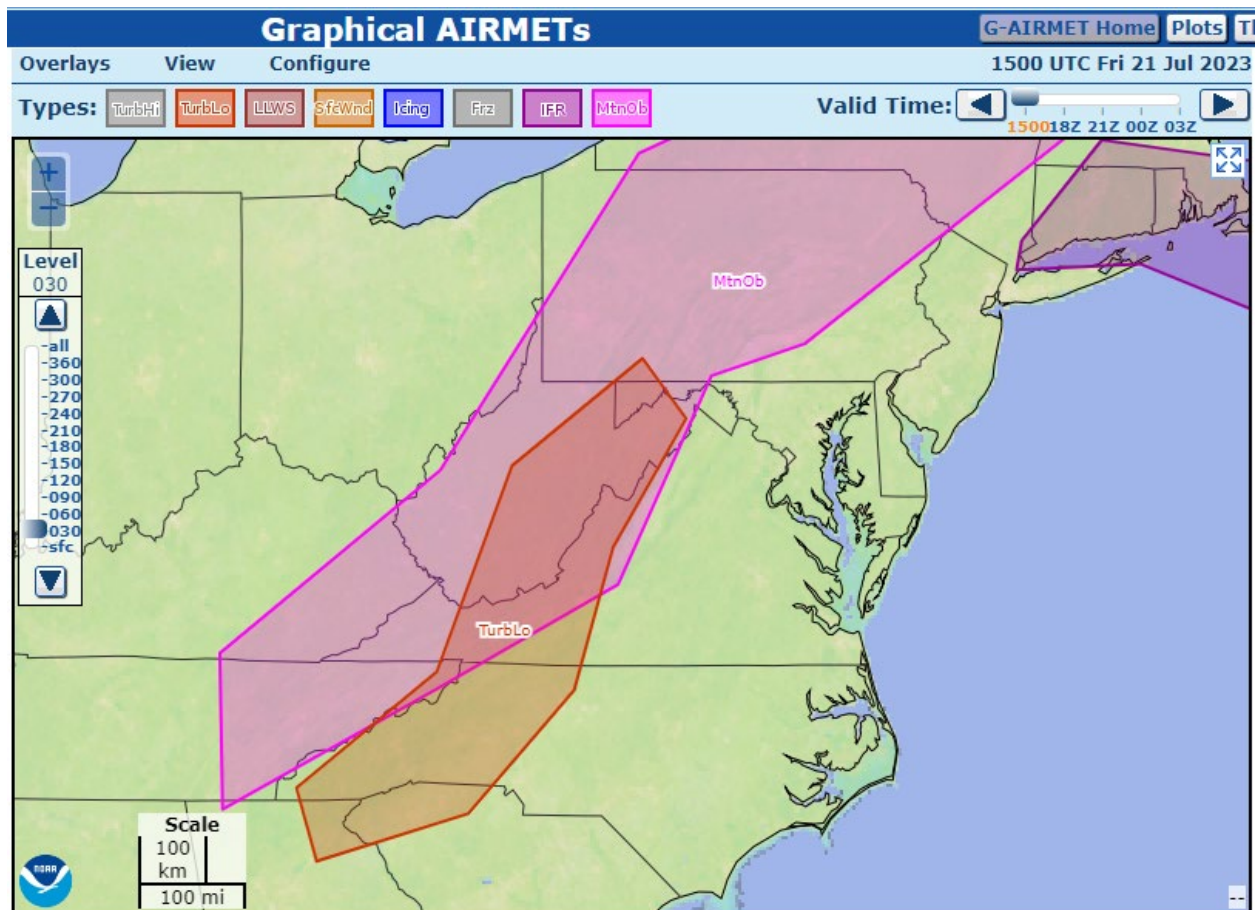


Figure 9 - NWS AWC inflight weather advisories current at the time of the accident.