



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

April 2, 2020

Weather Study

METEOROLOGY

CEN20FA110

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A. ACCIDENT

Location: Lincoln, Illinois
Date: March 3, 2020
Time: 0847 central standard time
1447 Coordinated Universal Time (UTC)
Aircraft: Cessna 172; Registration: N157SF

B. METEOROLOGIST

Paul Suffern
Senior Meteorologist
Operational Factors Division (AS-30)
National Transportation Safety Board

C. DETAILS OF THE INVESTIGATION

The National Transportation Safety Board's (NTSB) Meteorologist did not travel for this investigation and gathered the weather data for this investigation from official National Oceanic and Atmospheric Administration (NOAA) National Weather Service (NWS) sources including the National Centers for Environmental Information (NCEI). All times are central standard time (CST) based upon the 24-hour clock, where local time is -6 hours from UTC, and UTC=Z (unless otherwise noted). Directions are referenced to true north and distances in nautical miles. Heights are above mean sea level (msl) unless otherwise noted. Visibility is in statute miles and fractions of statute miles. Airport and NWS station identifiers are referenced using 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 location used for the accident site was latitude 40.1658° N, longitude 89.4181° W, with an approximate elevation of 560 feet (ft).

D. WEATHER 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 Weather Prediction Center, 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 joint NWS and Federal Aviation Administration (FAA) Advisory Circular (AC) “Aviation Weather Services”, AC 00-45H change 2¹.

1.1 Surface Analysis Chart

The central section of the NWS Surface Analysis Chart for 0900 CST is provided as figure 1 with the location of the accident site located within the red circle. The chart identified a surface low pressure system located over northern Ohio with a sea-level pressure of 998-hectopascals (hPa). The surface low pressure center was associated with a frontal system stretching from Lake Erie southwestward through Ohio and into the Tennessee Valley. The accident site was located on the cold air side of the frontal system.

The station models around the accident site depicted air temperatures ranging from 39 to 45 degrees Fahrenheit (°F), dew point temperatures between 33°F and 36°F with temperature-dew point spreads of 3° F or more, a southwest wind of 10 knots and overcast cloud cover.

¹

https://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.information/documentID/1030235

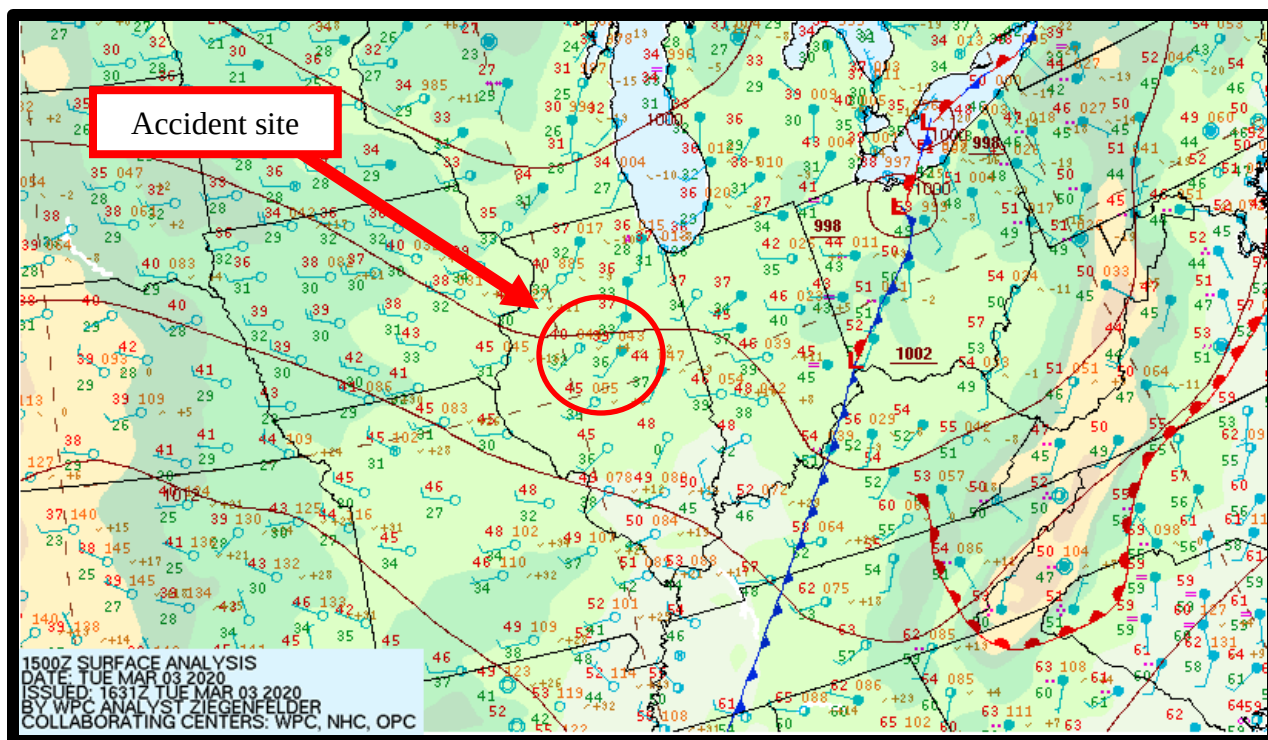


Figure 1 – NWS Surface Analysis Chart for 0900 CST

1.2 Upper Air Charts

The NWS Storm Prediction Center (SPC) Constant Pressure Charts for 0600 CST at 925-, 850-, and 700-hPa are presented in figures 2 through 4. There were troughs² at low- and mid-levels near the accident site at the accident time (figures 2 through 4). Troughs can act as lifting mechanisms to help produce clouds and precipitation if sufficient moisture is present. There was a west wind to 15 knots at 925-hPa above the accident site, and by 700-hPa, the wind above the accident site was from the southwest and the wind speed was around 40 knots (figure 4).

² Trough – An elongated area of relatively low atmospheric pressure or heights.

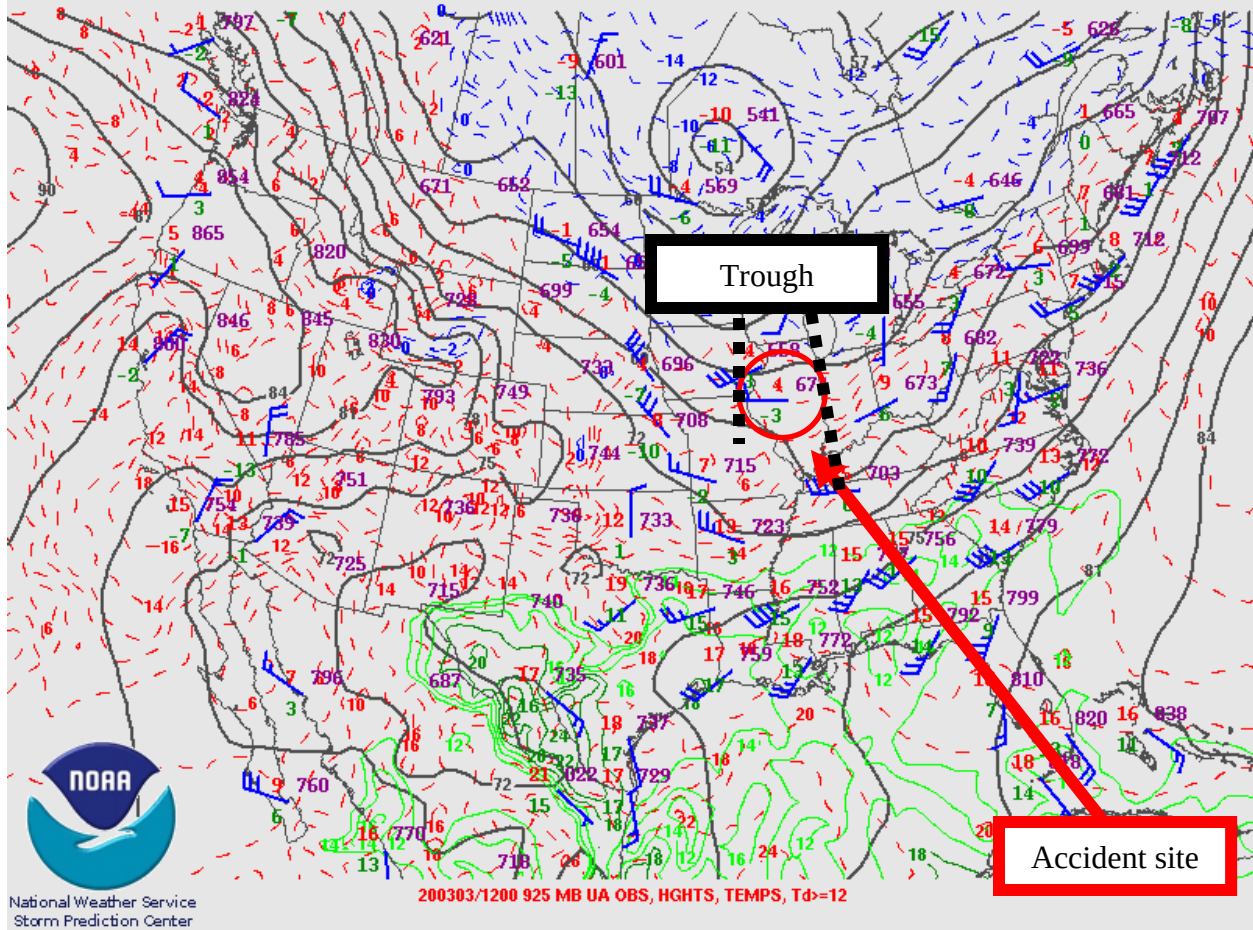
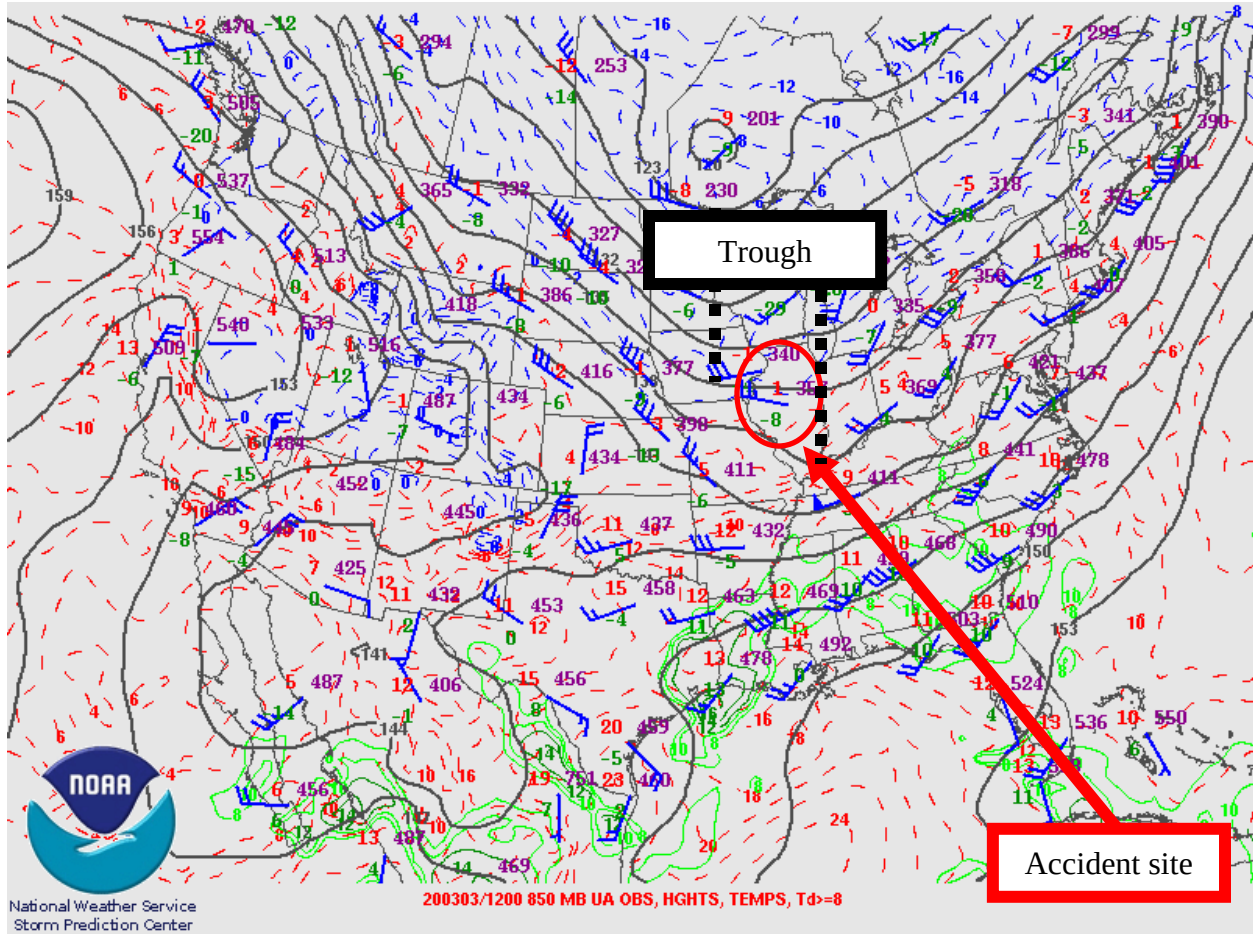


Figure 2 – 925-hPa Constant Pressure Chart for 0600 CST



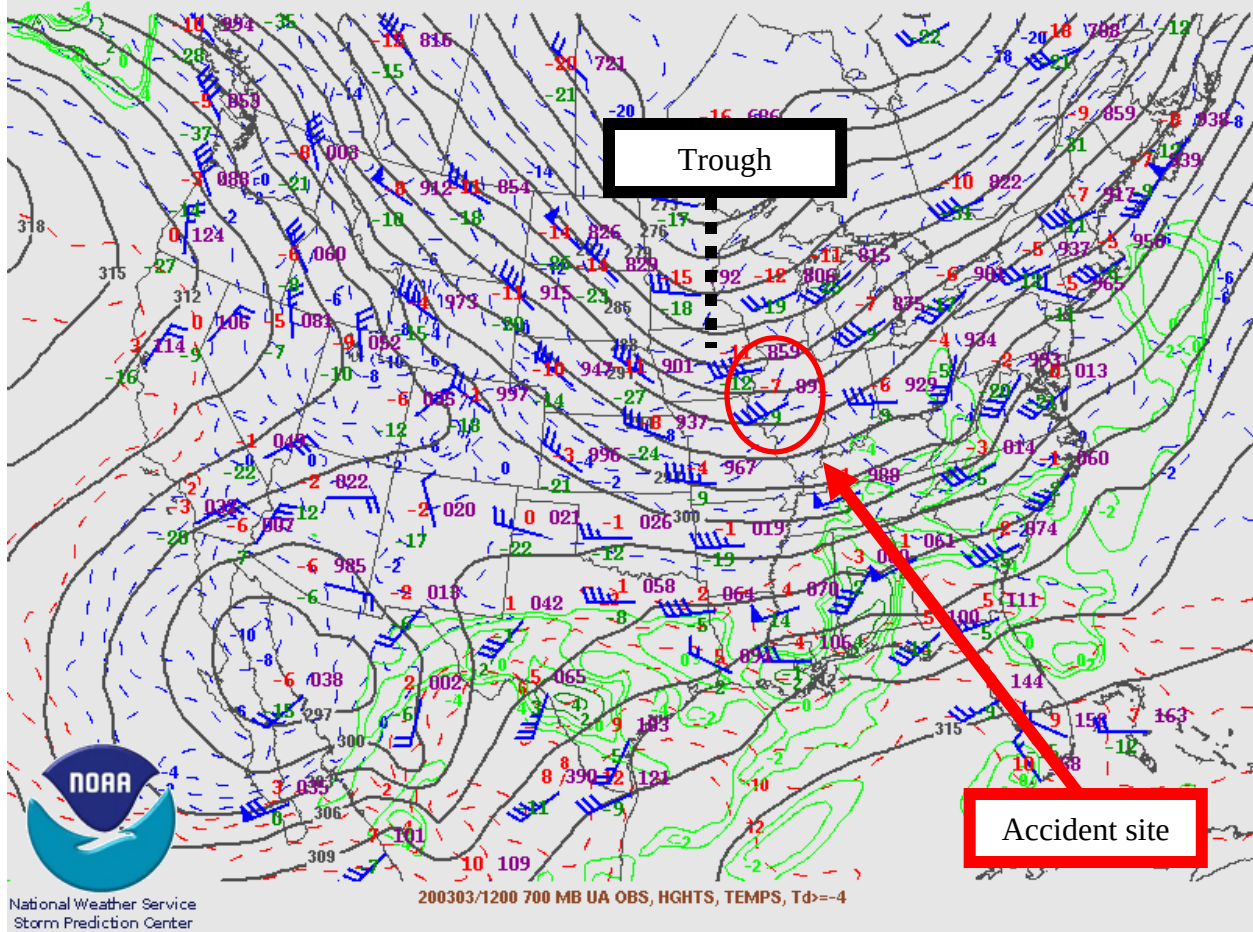


Figure 4 – 700-hPa Constant Pressure Chart for 0600 CST

2.0 Surface Observations

The area surrounding the accident site was documented using official Meteorological Aerodrome Reports (METARs) and Specials (SPECIs). The following observations were taken from standard code and are provided in plain language. Figure 5 is a local sectional chart with the accident site and the closest weather reporting location marked.

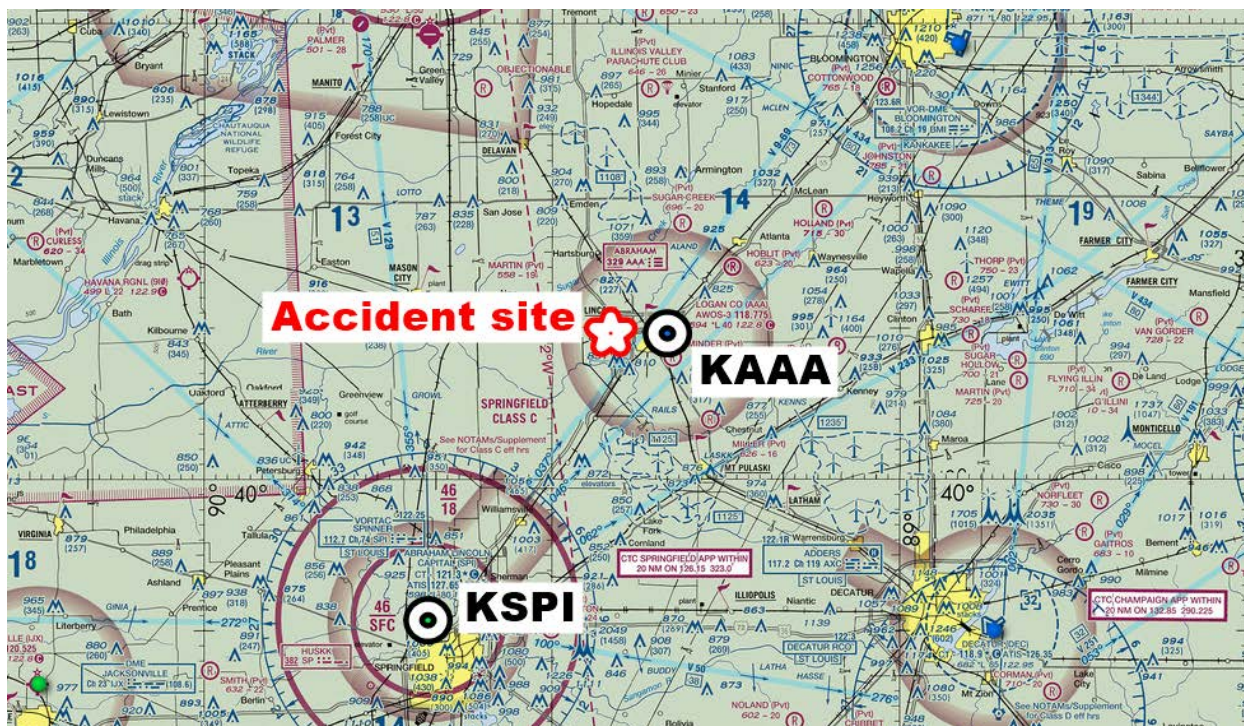


Figure 5 – Sectional map of the accident area with the location of the accident site and surface observation site

Logan County Airport (KAAA) had the closest official weather station to the accident site. KAAA had an Automated Weather Observing System (AWOS³) whose reports were not supplemented. KAAA was located 4 miles east of the accident site, at an elevation of 594 ft, and had a 2° westerly magnetic variation⁴ (figure 5). The following observations were taken and disseminated during the times surrounding the accident:⁵

- [0655 CST] METAR KAAA 031255Z AUTO 18003KT 5SM BR CLR 00/M01 A2966 RMK AO2 T10011015=
- [0715 CST] METAR KAAA 031315Z AUTO 00000KT 5SM BR CLR 01/M01 A2966 RMK AO2 T00101006=
- [0735 CST] METAR KAAA 031335Z AUTO 19004KT 7SM BKN070 BKN095 02/M01 A2966 RMK AO2 T00161006=

³ AWOS – Automated Weather Observing System is equipped with meteorological instruments to observe and report temperature, dewpoint, wind speed and direction, visibility, cloud coverage and ceiling up to 12,000 feet, and altimeter setting.

⁴ Magnetic variation – The angle (at a particular location) between magnetic north and true north. Latest measurement taken from <https://skyvector.com/>

⁵ The bold sections in this NWS product and the rest of the products in this report are intended to highlight the sections that directly reference the weather conditions that affected the accident location around the accident time. The local times in this section next to the METARs are provided for quick reference between UTC and local times around the accident time.

[0755 CST] METAR KAAA 031355Z AUTO 20003KT 10SM BKN070 OVC085 03/00
A2966 RMK AO2 T00251002=

[0815 CST] METAR KAAA 031415Z AUTO 21004KT 10SM SCT060 OVC070 03/00
A2966 RMK AO2 T00300000=

**[0835 CST] METAR KAAA 031435Z AUTO 24004KT 10SM BKN060 OVC075 05/00
A2967 RMK AO2 T00500004=**

ACCIDENT TIME 0847 CST

**[0855 CST] METAR KAAA 031455Z AUTO 24006KT 10SM SCT060 BKN075 OVC085
06/00 A2967 RMK AO2 T00590001=**

[0915 CST] METAR KAAA 031515Z AUTO 26006KT 10SM BKN075 BKN085 07/00
A2967 RMK AO2 T00700000=

[0935 CST] METAR KAAA 031535Z AUTO 27011G17KT 10SM SCT070 08/00 A2967
RMK AO2 T00831001=

[0955 CST] METAR KAAA 031555Z AUTO 25007G14KT 220V290 10SM CLR 09/00
A2967 RMK AO2 T00911001=

KAAA weather at 0835 CST, automated, wind from 240° at 4 knots, 10 miles visibility or greater, broken ceiling at 6,000 ft above ground level (agl), overcast skies at 7,500 ft agl, temperature of 5° Celsius (C), dew point temperature of 0°C, and an altimeter setting of 29.67 inches of mercury (inHg). Remarks: automated station with a precipitation discriminator, temperature 5.0°C, dew point temperature 0.4°C.

KAAA weather at 0855 CST, automated, wind from 240° at 6 knots, 10 miles visibility or greater, scattered clouds at 6,000 ft agl, broken ceiling at 7,500 ft agl, overcast skies at 8,500 ft agl, temperature of 6°C, dew point temperature of 0°C, and an altimeter setting of 29.67 inHg. Remarks: automated station with a precipitation discriminator, temperature 5.9°C, dew point temperature 0.1°C.

The observations from KAAA surrounding the accident time indicated VFR⁶ conditions with a southwest wind around 5 knots. A stronger west wind gusting to 17 knots did not occur until 0935 CST.

⁶ 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.

3.0 Upper Air Data

A High-Resolution Rapid Refresh (HRRR)⁷ model sounding was created for the accident site for 0900 CST with a station elevation of 577 ft.⁸ The 0900 CST HRRR sounding was plotted on a standard Skew-T Log P diagram⁹ with the derived stability parameters included in figure 6 with data from the surface to 700-hPa (or approximately 10,000 ft msl). These data were analyzed using the RAOB¹⁰ software package. The sounding depicted the lifted condensation level (LCL)¹¹ at 2,013 ft agl (2,590 ft msl) and the convective condensation level (CCL)¹² at 5,942 ft agl (6,519 ft msl). The freezing level was located at 3,844 ft agl (4,421 ft msl). The precipitable water value was 0.35 inches.

****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.**

⁷ The HRRR is a NOAA real-time three-kilometer (km) 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.

⁸ The HRRR sounding was obtained from the NOAA Air Resource Laboratory:
<https://ready.arl.noaa.gov/READYamet.php>

⁹ 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.

¹⁰ RAOB – (The complete Rawinsonde Observation program) is an interactive sounding analysis program developed by Environmental Research Services, Matamoras, Pennsylvania.

¹¹ LCL - The height at which a parcel of moist air becomes saturated when it is lifted dry adiabatically.

¹² 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.

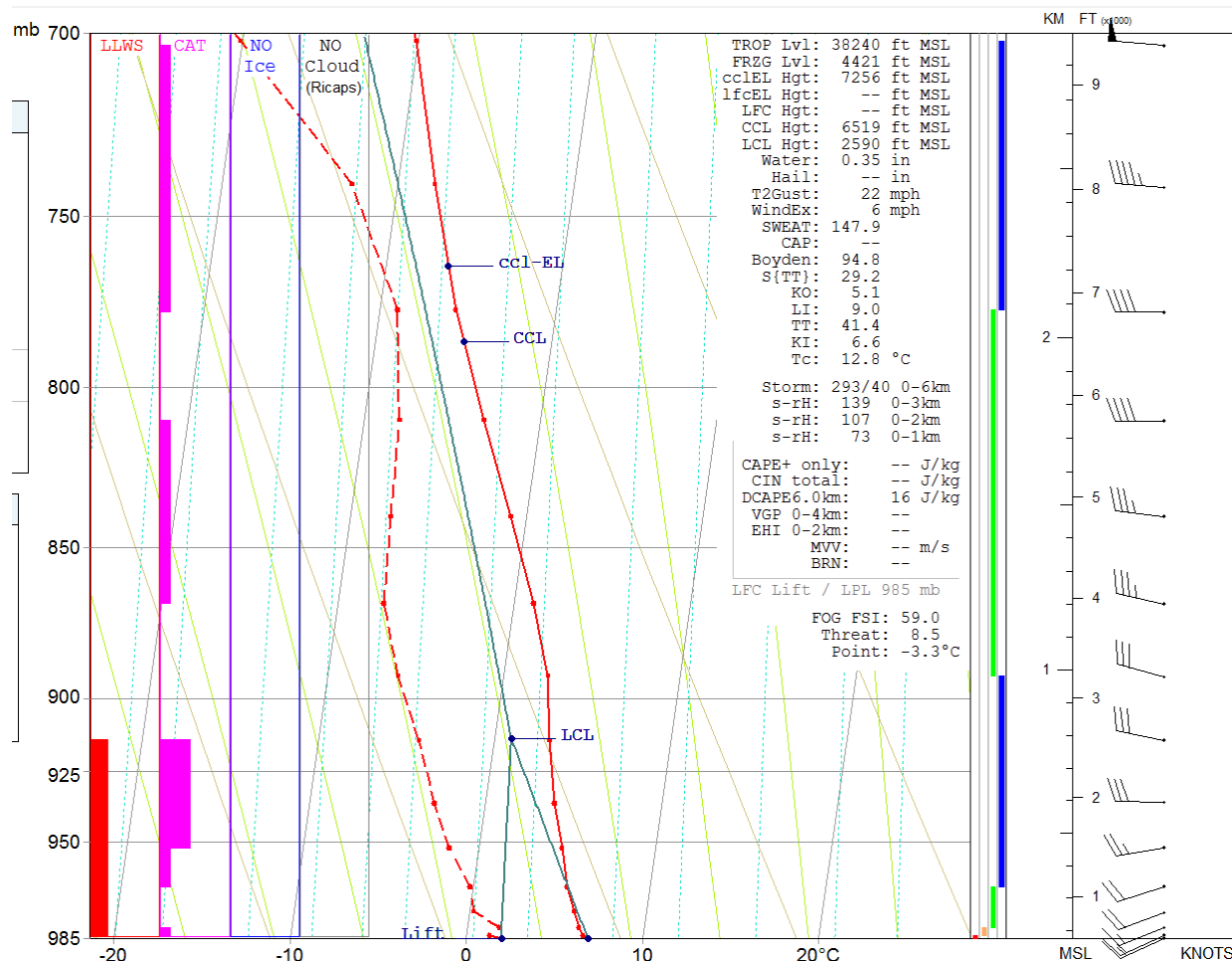


Figure 6 – 0900 CST HRRR sounding

The 0900 CST HRRR sounding indicated layers of conditional instability and instability between the surface and 7,000 ft msl. RAOB did not identify the possibility of clouds below 10,000 ft msl. RAOB did not identify any layers of icing for below 10,000 ft msl.

The 0900 CST HRRR sounding wind profile indicated a surface wind from 244° at 14 knots with a southwesterly wind through 1,000 ft msl and a westerly wind from 1,000 ft msl through 10,000 ft msl. The wind increased in speed to 20 knots by 500 ft agl with a 30 knot wind by ~1,500 ft agl. RAOB indicated the possibility of light low-level wind shear (LLWS) between the surface and 3,000 ft msl. RAOB indicated a possibility of light to moderate clear-air turbulence between the surface and 10,000 ft msl.

4.0 Satellite Data

Geostationary Operational Environmental Satellite 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. The GOES-16 visible (band 2) and infrared (band 13) imagery at wavelengths of 0.64 microns (μm) and 10.3 μm , respectively, were retrieved for the period from 0600 CST through 1100 CST and reviewed. The closest images to the time of the accident are documented here.

Figure 7 presents the GOES-16 visible imagery from 0850 CST at 2X magnification with the accident site highlighted with a red square. Inspection of the visible imagery indicated cumuliform cloud cover over the accident site. The cloud cover was moving from west to east across the accident site at the accident time (attachment 1). Figure 8 presents the GOES-16 infrared imagery from 0850 CST at 6X magnification with the accident site highlighted with a red square. Inspection of the infrared imagery indicated overcast cloud cover over the accident site with the lower brightness temperatures (yellow colors; higher cloud tops) located to the northeast of the accident site. Based on the brightness temperatures above the accident site and the vertical temperature profile provided by the HRRR sounding, the approximate cloud-top heights over the accident site were 8,000 ft msl at 0900 CST (temperature of ~ 265 Kelvin). It should be noted these figures have not been corrected for any parallax error.

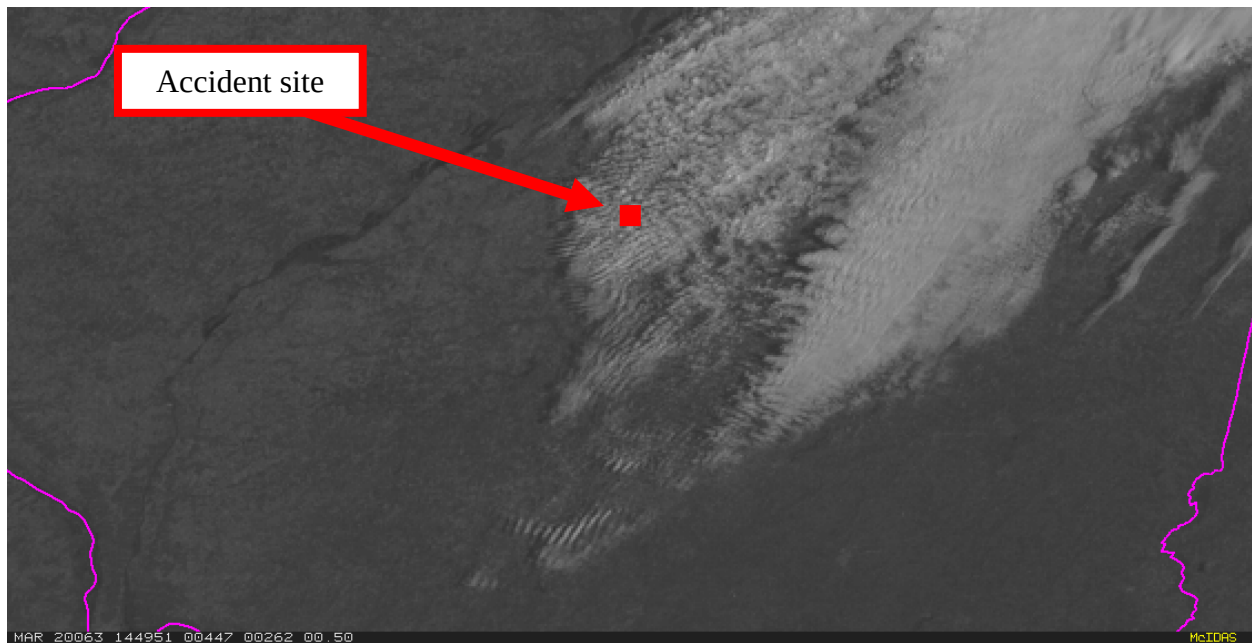


Figure 7 – GOES-16 visible image at 0850 CST

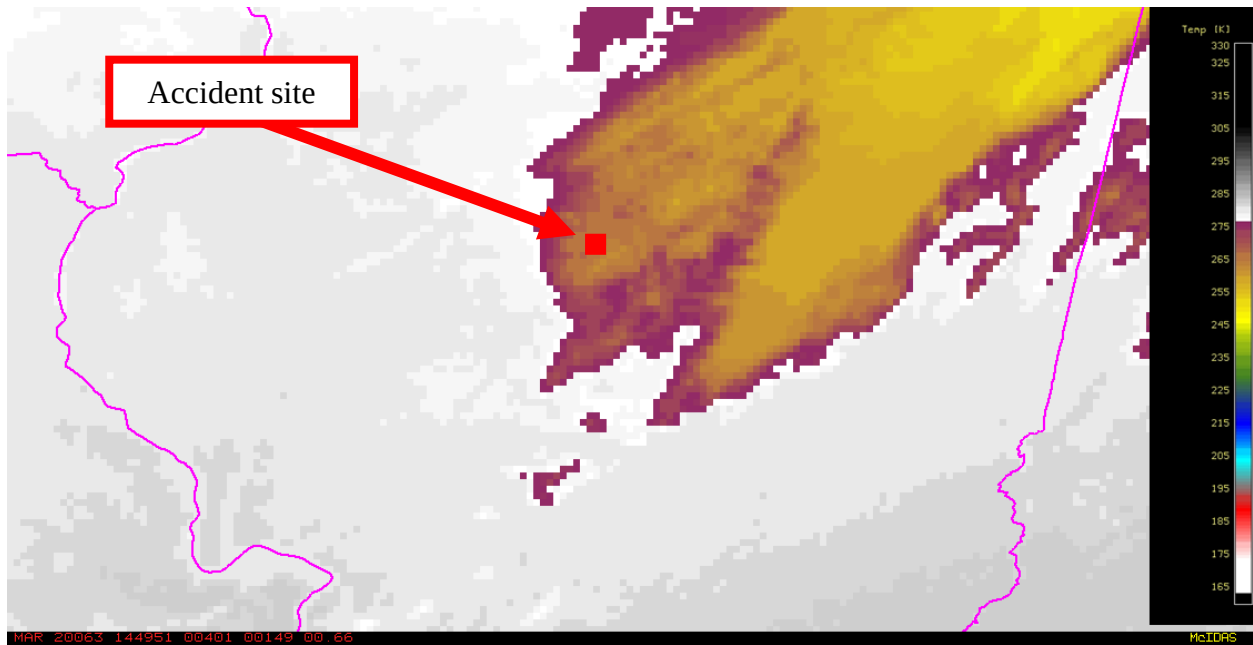


Figure 8 – GOES-16 infrared image at 0850 CST

5.0 Regional Radar Imagery Information

A regional view of the NWS National Composite Radar Mosaic is included as figure 9 for 0850 CST with the approximate location of the accident site marked by a red circle. The image depicted no precipitation targets above the accident site at the accident time.

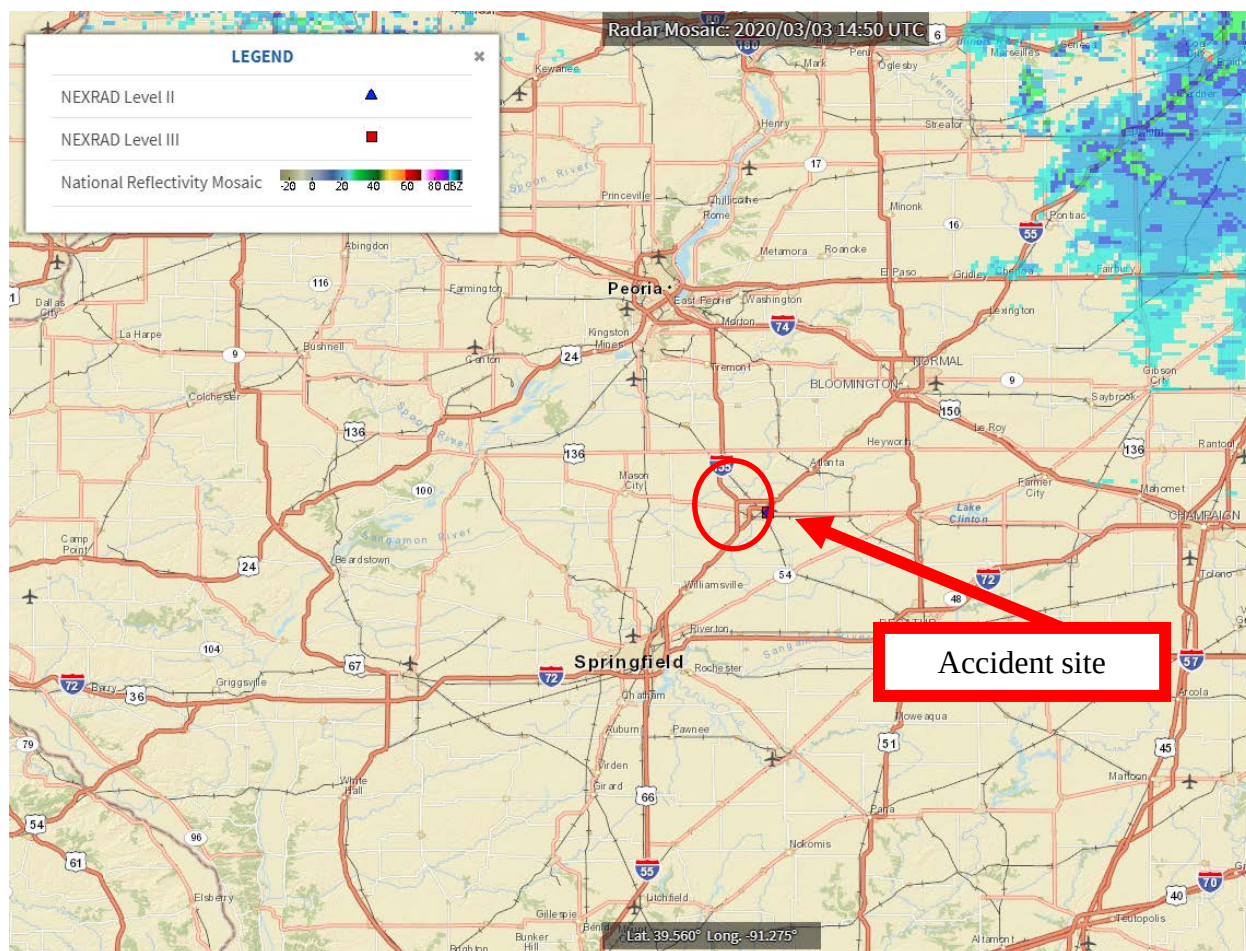


Figure 9 – Regional Composite Reflectivity image for 0850 CST

6.0 Pilot Reports¹³

There were no pilot reports (PIREPs) within 75 miles of the accident site from about three hours prior to the accident time to about three hours after the accident time for 18,000 ft and below.

7.0 SIGMET

There were no convective or non-convective Significant Meteorological Information (SIGMET) advisories valid for the accident site at the accident time for below 10,000 ft.

8.0 CWSU Products

There were no Center Weather Service Unit (CWSU) Center Weather Advisories (CWA) or Meteorological Impact Statement (MIS) valid for the accident site at the accident time.

¹³ Only pilot reports with the World Meteorological Organization headers UBIL**, UBIN**, UBMO**, and UBIA** were considered.

9.0 AIRMETs

An Airmen's Meteorological Information (AIRMET) advisory Zulu was issued at 0245 CST and an AIRMET Tango was issued at 0845 CST. These AIRMETs were valid for the accident site at the accident time, and warned of moderate icing conditions between the freezing level¹⁴ and 14,000 ft and moderate turbulence below 8,000 ft:

WAUS43 KPCI 030845

WA3Z

-CHIZ WA 030845

AIRMET ZULU UPDT 2 FOR ICE AND FRZLVL VALID UNTIL 031500

.
**AIRMET ICE...ND SD NE KS MN IA MO WI LM LS MI IL IN
FROM 50SSE YWG TO 30NE INL TO YQT TO 80NNE SAW TO 20NW GIJ TO
30ENE AXC TO 20NE UIN TO 40SW BUM TO 60WSW MCI TO 30NNW RWF TO
50SSW FAR TO 60NW MOT TO 50SSE YWG
MOD ICE BTN FRZLVL AND 140. FRZLVL SFC-070. CONDS CONTG BYD 15Z
THRU 21Z.**

.
OTLK VALID 1500-2100Z

AREA 1...ICE ND MN IA WI LM LS MI LH IL IN

BOUNDED BY 40NNE INL-YQT-SSM-40ESE ECK-FWA-20W IND-30ENE AXC-30SW
BDF-20NW EAU-60WSW BRD-50SSW YWG-40NNE INL

MOD ICE BTN FRZLVL AND 140. FRZLVL SFC-050. CONDS CONTG THRU 21Z.

.
AREA 2...ICE ND SD NE MN IA

BOUNDED BY 70SW YWG-60NNW RWF-50W FOD-30NE SNY-BFF-70SW RAP-50NNW
ISN-70SW YWG

MOD ICE BTN FRZLVL AND FL180. FRZLVL SFC-080. CONDS DVLPG AFT
15Z. CONDS CONTG THRU 21Z.

.
FRZLVL...RANGING FROM SFC-095 ACRS AREA

MULT FRZLVL BLW 050 BOUNDED BY 70NW MOT-20WNW FAR-30SSE DLH-
90SSW YQT-40ESE YQT-SSM-20NNE YVV-30ESE ECK-FWA-50ESE IOW-
40SSE MCW-20ENE BFF-70SW RAP-50NNW ISN-70NW MOT
SFC ALG 30W LBL-30S SLN-60S PWE-20ENE DSM-30NW IOW-30W JOT-
30SSE ECK

040 ALG 50SE LAA-50ESE SLN-20NW IRK-40NE IRK-30NW AXC-20NE FWA
080 ALG RZC-40NNE ARG-20S IIU-40SE CVG-20W HNN

....

WAUS43 KPCI 031445

WA3T

-CHIT WA 031445

AIRMET TANGO UPDT 4 FOR TURB AND LLWS VALID UNTIL 032100

.
...SEE SIGMET PAPA SERIES...

.
AIRMET TURB...NE KS IA MO IL IN KY OK TX AR TN LA MS AL
FROM 40ENE IRK TO 30SW BVT TO 50SSW FWA TO CVG TO HNN TO HMV TO
GQO TO 20NW PZD TO 40ENE MLU TO 30NW CWK TO 90S MRF TO ELP TO
INK TO 30ESE TBE TO 50W LBL TO GLD TO 20NE HLC TO 40ENE IRK
MOD TURB BTN FL180 AND FL420. CONDS CONTG BYD 21Z THRU 03Z.

¹⁴ Freezing level indicated between the surface and 7,000 ft msl in this AIRMET Zulu.

.
 AIRMET TURB...ND SD NE KS MN IA MO WI LM MI IL IN
 FROM 60N ISN TO PIR TO 20SW DBQ TO 30S PMM TO 50SSW FWA TO 60E
 PWE TO GLD TO BFF TO 70SW RAP TO 60N ISN
 MOD TURB BTN FL240 AND FL410. CONDS CONTG BYD 21Z THRU 03Z.

.
 AIRMET TURB...ND SD NE
 FROM 50N ISN TO 50SSW BIS TO 20SSE OBH TO 20SSE SNY TO BFF TO
 70SW RAP TO 50N ISN
 MOD TURB BLW 120. CONDS DVLPG 15-18Z. CONDS CONTG BYD 21Z ENDG
 00-03Z.

.
AIRMET TURB...IA WI LM MI IL IN KY
FROM 50SW RHI TO 40NE GRB TO 20S PMM TO 40ENE FWA TO 40SSE CVG
TO 50ENE PXV TO 20ENE UIN TO 20W DBQ TO 50SW RHI
MOD TURB BLW 080. CONDS DVLPG 18-21Z. CONDS CONTG BYD 21Z THRU
03Z.

.
 AIRMET TURB...KY TN AL
 FROM 20WSW HNN TO HNV TO GQO TO 40W PZD TO 40ESE MEI TO 50ESE
 BWG TO 20WSW HNN
 MOD TURB BLW 100. CONDS CONTG BYD 21Z ENDG BY 00Z.

.
 LLWS POTENTIAL...ND SD
 BOUNDED BY 40SSW ISN-30WSW DPR-20SW RAP-70SW RAP-40SSW ISN
 LLWS EXP. CONDS DVLPG AFT 15Z. CONDS ENDG BY 21Z.

.
 OTLK VALID 2100-0300Z
 AREA 1...TURB NE KS IA MO IL IN KY OK TX AR TN LA MS AL
 BOUNDED BY 40WSW ROD-CVG-HNN-HMV-GQO-50S LGC-60WSW DLF-90S MRF-
 ELP-INK-30ESE TBE-50W LBL-30NNE LAA-50N SLN-40N MCI-40WSW ROD
 MOD TURB BTN FL180 AND FL420. CONDS CONTG THRU 03Z.

.
 AREA 2...TURB ND SD NE KS MN IA MO WI LM LS MI LH IL IN
 BOUNDED BY 60N MOT-20SSE YVV-30SE ECK-FWA-40SW ROD-20NE IND-
 30ESE PWE-50N SLN-20SSE LBF-40NNW BFF-70SW RAP-50NNW ISN-60N MOT
 MOD TURB BTN FL240 AND FL410. CONDS CONTG THRU 03Z.

.
 AREA 3...TURB IA WI LM MI LH IL IN KY
 BOUNDED BY 50NNW TVC-60SW YVV-30SE ECK-FWA-30SSE CVG-40W IIU-
 20ENE UIN-20W DBQ-40E EAU-50NNW TVC
 MOD TURB BLW 080. CONDS CONTG THRU 03Z.

.
 AREA 4...TURB ND SD NE MN IA
 BOUNDED BY 60N ISN-60S BIS-FOD-20S OBH-20SSE SNY-BFF-70SW RAP-
 60N ISN
 MOD TURB BLW 120. CONDS ENDG 00-03Z.

....

10.0 Graphical Forecasts for Aviation

The Graphical Forecasts for Aviation (GFA) products available before the accident flight are shown in attachment 2. The GFA surface forecast products indicated VFR surface visibilities at the accident site for 0900 CST. The GFA did not indicate a chance for precipitation, but a surface wind from the west with wind speeds between 10 to 20 knots was forecast. The GFA cloud forecast valid at the accident time indicated few to overcast cloud ceiling at 6,000 ft msl and clouds tops to 10,000 msl with a G-AIRMET Zulu depicted over the accident site. For more information please see attachment 2.

11.0 Terminal Aerodrome Forecast

Abraham Lincoln Capital Airport (KSPI) was the closest airport to the accident site with a NWS Terminal Aerodrome Forecast (TAF). KSPI was located 23 miles south-southwest of the accident site with an elevation of 598 ft (figure 5). The KSPI TAF valid at the time of the accident was issued at 0528 CST and was valid for a 24-hour period beginning at 0600 CST. The TAF for KSPI was as follows:

```
TAF KSPI 031128Z 0312/0412 23005KT P6SM SCT050 BKN100
FM031500 25013G20KT P6SM FEW250
FM031700 27017G28KT P6SM FEW250
FM040000 26010KT P6SM FEW250
FM040600 21009KT P6SM FEW120=
```

Between 0600 and 0900 EDT, the forecast expected a wind from 230° at 5 knots, greater than 6 miles visibility, scattered clouds at 5,000 ft agl, and a broken ceiling at 10,000 ft agl. After 0900 CST, the surface wind was forecast to increase in speed to between 13 and 20 knots.

12.0 NWS Area Forecast Discussion

The NWS office in Lincoln, Illinois, issued the following Area Forecast Discussion (AFD) at 0553 CST (closest AFD to the accident time). The aviation section of the AFD discussed continued VFR conditions prevailing from the morning into the afternoon with the winds becoming gusty by the afternoon:

```
FXUS63 KILX 031153
AFDILX
```

Area Forecast Discussion
National Weather Service Lincoln IL
553 AM CST Tue Mar 3 2020

.SYNOPSIS...
Issued at 301 AM CST Tue Mar 3 2020

Mild temperatures are expected over the next few days with highs generally in the 50s and overnight lows in the 30s through Thursday. Primarily dry conditions are also expected, though there is an off chance for light precip tonight. Briefly cooler temperatures are expected on Friday with highs back in the 40s,

but warmer temperatures return over the weekend with highs into the 50s and possibly 60s.

&&

.SHORT TERM...(Today and tonight)
ISSUED AT 301 AM CST Tue Mar 3 2020

Early this morning, low pressure is located over far northern Minnesota with a cold front stretching south across Iowa. This front will shift east across central Illinois late this morning through the afternoon. Tightening pressure gradient behind the front and steep low level lapse rates resulting from cold advection into the region will allow for gusty conditions behind the front through much of the day. Forecast soundings suggest gusts to near 30 kt (35 mph) at times this afternoon. Despite passage of the cold front and cold advection, soundings indicate a very dry column with little if any flat cumulus development behind the front. Clearing skies should still allow temperatures to warm into the lower to mid 50s this afternoon.

Temperatures will fall into the lower to mid 30s tonight with winds dropping off shortly after sunset as the boundary layer decouples. Meanwhile, a fast moving shortwave trough over the Pacific Northwest early this morning will dig across the Midwest late tonight. Expect an increase in mid level cloud cover in response to the wave along with an off chance for some light precip, mainly near and north of I- 74, though given the dry air in place ahead of the wave, more likely to just see a few sprinkles/flurries or stay dry tonight.

.LONG TERM...(Wednesday through Monday)
ISSUED AT 301 AM CST Tue Mar 3 2020

Fair and continued mild weather is expected on Wednesday. Flat upper ridge will build across the region behind the departing fast moving shortwave trough. This should result in another sunny day with highs into the 50s across central Illinois. Another slightly more amplified shortwave is expected to dig across the Upper Midwest on Thursday. Increased southwest flow ahead of this feature will help warm temperatures into the mid to upper 50s, and a few locations may tag 60F. Forecast soundings continue to indicate a very dry column with Gulf moisture still cut off well to our south by active southern stream shunting moisture closer to the Gulf Coast. With this in mind, should be another dry frontal passage with increasing winds being the primary forecast concern of note. Soundings show deep mixing behind the front Thursday afternoon, and gusts into the 30-40 mph range will be possible.

A broad 1030+ mb high will builds across the Great Plains and Mississippi Valley following the cold front Thursday night into Friday. Briefly cooler temperatures will overspread the area, though still seasonable for this time of year with highs in the 40s. While the surface high progresses east towards the mid Atlantic Coast over the weekend, a strong upper ridge will build across the mid section of the country resulting in warm and dry

conditions over the weekend. Low pressure will move across the region early next week bringing additional chances for showers and possibly some storms. At this distance, there is still a good deal of uncertainty on the timing, strength, and track of the low.

&&

**.AVIATION...(For the 12Z TAFS through 12Z Wednesday morning)
Issued at 520 AM CST Tue Mar 3 2020**

VFR conditions will prevail through the period, but winds will become quite gusty this afternoon. This morning, light flow is in place, but winds are expected to pick up out of the southwest through the morning as a cold front approaches from the west. As the cold front sweeps across the region through the late morning and afternoon, winds will veer to the west or west-northwest with gusts to around 30 kt through the remainder of the day. **Do not expect any precip with the front, but mid and high clouds will increase ahead of the front, then clear out behind the front.** Winds will diminish after sunset this evening, then back to the southwest overnight.

&&

.ILX WATCHES/WARNINGS/ADVISORIES...
NONE.
&&

\$\$

13.0 Winds and Temperature Aloft Forecast

The NWS 0754 CST Winds and Temperature Aloft forecast valid for the closest point to the accident site is included below:

FBUS31 KWN0 031354
FD1US1
DATA BASED ON 031200Z
VALID 031800Z FOR USE 1400-2100Z. TEMPS NEG ABV 24000

FT	3000	6000	9000	12000	18000	24000	30000	34000	39000
SPI	2830	2945-04	2857-10	2862-17	2767-26	2787-32	773640	782946	279952

The accident site was located closest to the Springfield, Illinois, (SPI) forecast point. The 0754 CST SPI forecast for use between 0800 CST and 1500 CST indicated a wind at 3,000 ft from 280° at 30 knots and a wind at 6,000 ft from 290° at 45 knots with a temperature of -4°C.

14.0 Pilot Weather Briefing

The accident pilot did not request nor receive a weather briefing from Leidos or ForeFlight.

Information obtained from ForeFlight indicated the accident pilot did update the route string at 0717:19 CST and view an airport ID at 0719:47 CST (attachment 4), but no static weather imagery or weather briefing was requested or viewed prior to the flight. For more information please see attachment 4. There is no record of the accident pilot receiving or retrieving any other weather information before or during the accident flight.

15.0 Witness Information

A witness in the area of the accident site between 0945 and 1000 CST indicated VFR conditions prevailed with “...one or two small clouds...” around 2,000 to 2,500 ft msl and very light chop. When operating around 1,300 ft msl the light chop increased in intensity. For more information please see attachment 3.

16.0 Astronomical Data

The astronomical data obtained for the accident site on March 3, 2020, indicated the following:

SUN	
Begin civil twilight	0600 CST
Sunrise	0627 CST
Accident time	0847 CST¹⁵
Sun transit	1209 CST
Sunset	1753 CST
End civil twilight	1819 CST

E. LIST OF ATTACHMENTS

Attachment 1 – GOES-16 Visible satellite animation from 0601 to 0901 CST

Attachment 2 – GFA products valid for the accident flight

Attachment 3 – Witness Information

Attachment 4 – ForeFlight Correspondence

¹⁵ Inserted accident time for reference and context.

Submitted by:

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