



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

April 3, 2015

Group Chairman's Weather Study Report

METEOROLOGY

CEN15FA164

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A. ACCIDENT

Location: 2 miles west of downtown St. Louis, Missouri
Date: March 6, 2015
Time: approximately 2310 central standard time (0510 UTC¹ on March 7, 2015)
Aircraft: Airbus Helicopter EC-130, registration: N356AM

B. METEOROLOGY GROUP

Paul Suffern
Senior Meteorologist
National Transportation Safety Board
Operational Factors Division, AS-30
Washington, D.C. 20594-2000

C. SUMMARY

For a summary of the accident, refer to the *Accident Summary* report, which is available in the docket for this investigation.

D. 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 the NTSB's Washington D.C. office and from official National Oceanic and Atmospheric Administration (NOAA) National Weather Service (NWS) sources including the National Climatic Data Center (NCDC). All times are central standard time (CST) on March 6, 2015, and are 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.

The accident location was located at latitude 38.62° N, longitude 90.24° W, elevation 536 feet.

¹ UTC – is an abbreviation for Coordinated Universal Time.

E. FACTUAL INFORMATION

1.0 Synoptic Situation

The synoptic or large scale migratory weather systems influencing the area were documented using standard NWS charts issued by the National Center for Environmental Prediction (NCEP) and the Weather Prediction Center (WPC), located in College Park, Maryland. These are the base products used in describing synoptic weather features and in the creation of forecasts and warnings for the NWS. Reference to these charts can be found in the joint NWS and Federal Aviation Administration (FAA) Advisory Circular “Aviation Weather Services”, AC-0045G CHG 1.

1.1 Surface Analysis Chart

The NWS Surface Analysis Chart for 0000 CST March 7 is provided as figure 1, with the approximate location of the accident site marked. The chart depicted a warm front stretched from southern Wisconsin southward to just west of the accident site. A surface low pressure center with a pressure of 1019-hectopascals (hPa) was located in southern Wisconsin (figure 1). The station models around the accident site depicted temperatures in the mid 20's to low 40's Fahrenheit (F), with temperature-dew point spreads of 11° F or less, a south to southwest wind between 5 and 15 knots, and clear skies. Areas near fronts are typically areas where enhanced lift, clouds, and precipitation can occur. In this case, the warm front band was rather weak and had no mid to upper level energy to accompany it (section 1.2). So while clouds and precipitation would not be expected lift of the air and a change of wind direction and wind speed with height would be expected.

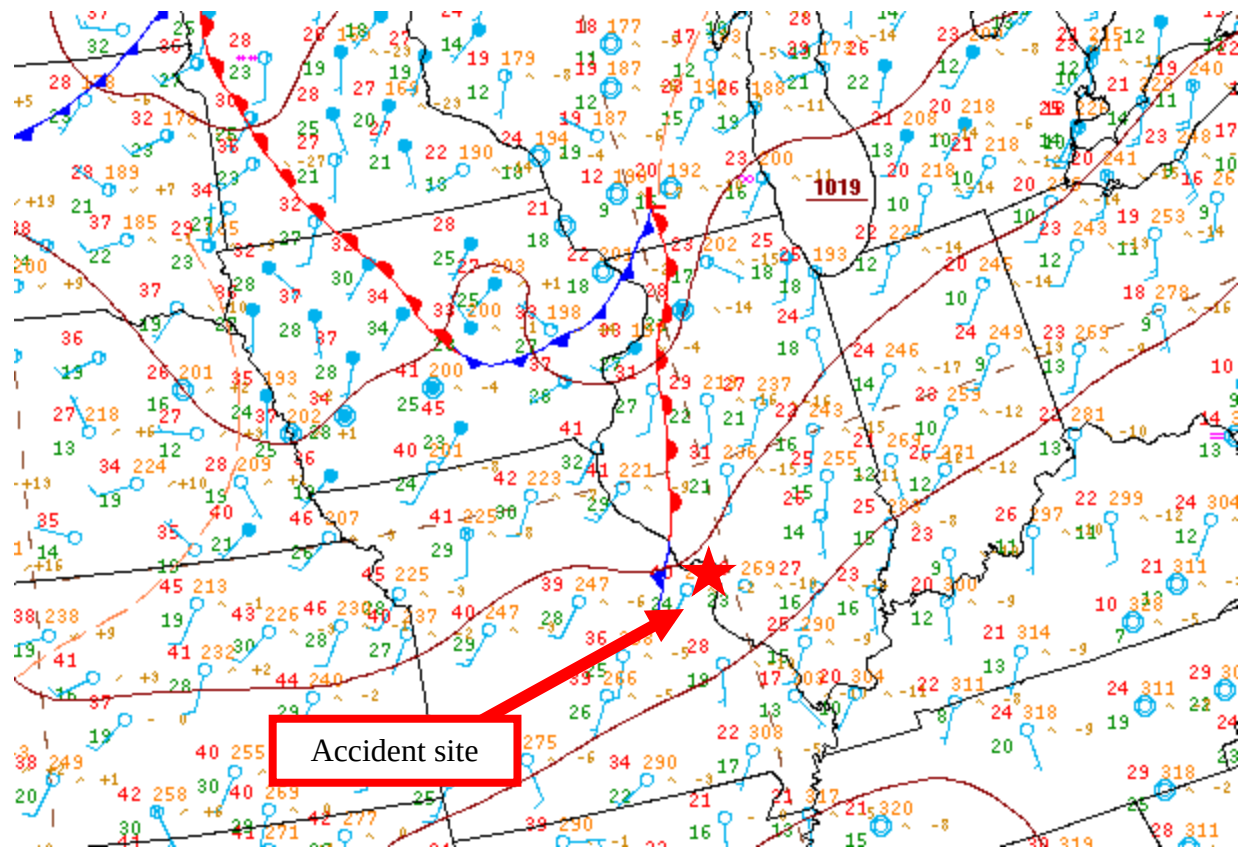


Figure 1 – NWS Surface Analysis Chart for 0000 CST on March 7

1.2 Upper Air Charts

The NWS Storm Prediction Center (SPC) Constant Pressure Charts for 1800 CST at 925-, 850-, 700-, 500-, and 300-hPa are presented in figures 2 through 6. The 925- and 850-hPa charts depicted a low-level trough² just east of the accident site at 1800 CST with a westerly wind between 25 and 35 knots. Areas near and ahead of troughs are typically areas where enhanced lift, clouds, and precipitation can occur. As with the surface environment (section 1.1), there was little to no mid and upper-level support over the accident site and so clouds and precipitation would not be expected. But given the possibility of enhanced lift in the accident area, the strong 25 to 35 knot wind would be expected to mix closer to the surface and cause turbulence. The westerly wind at 925- and 850-hPa became more northwesterly by 500- and 300-hPa with the wind speed up 95 knots.

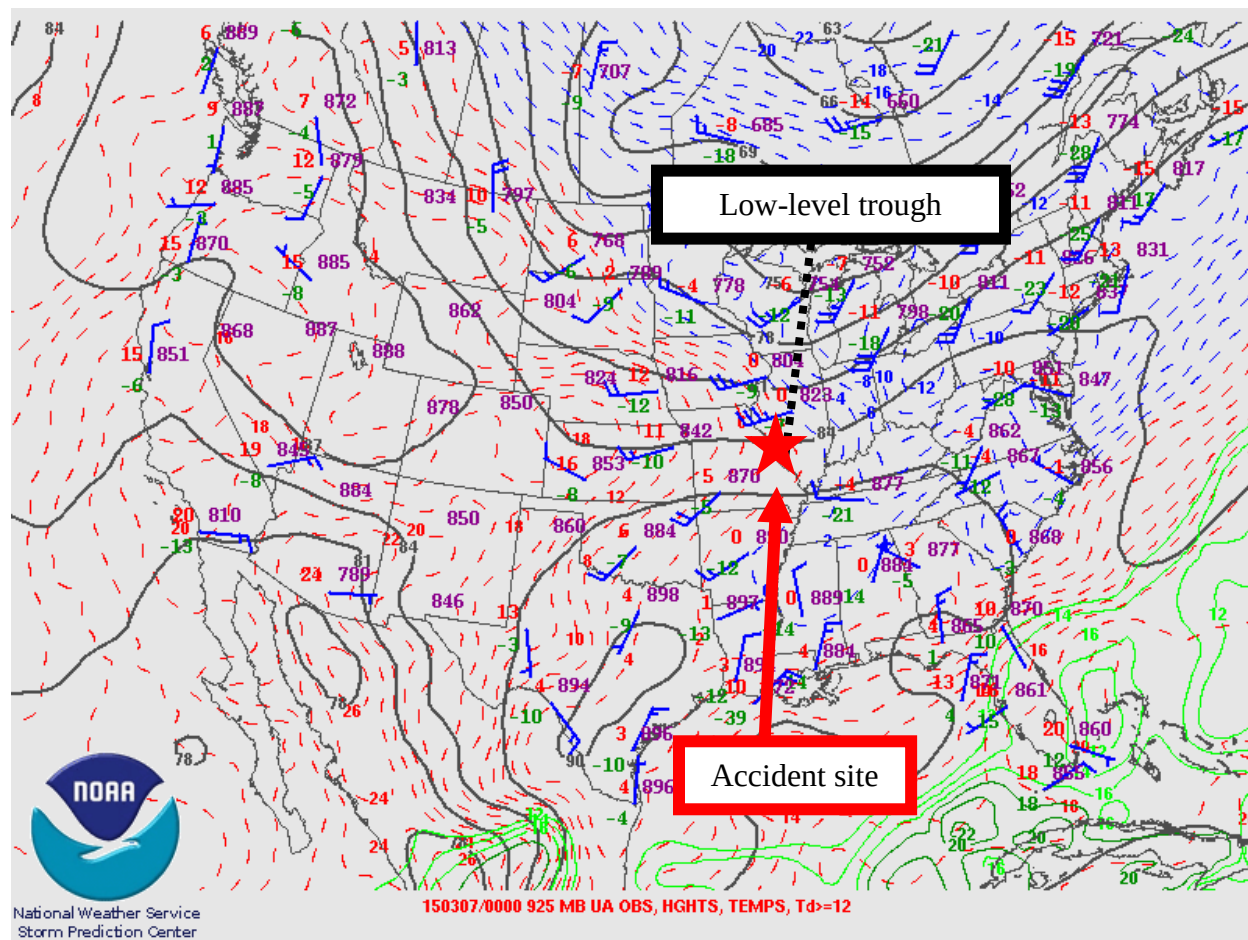


Figure 2 – 925-hPa Constant Pressure Chart for 1800 CST

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

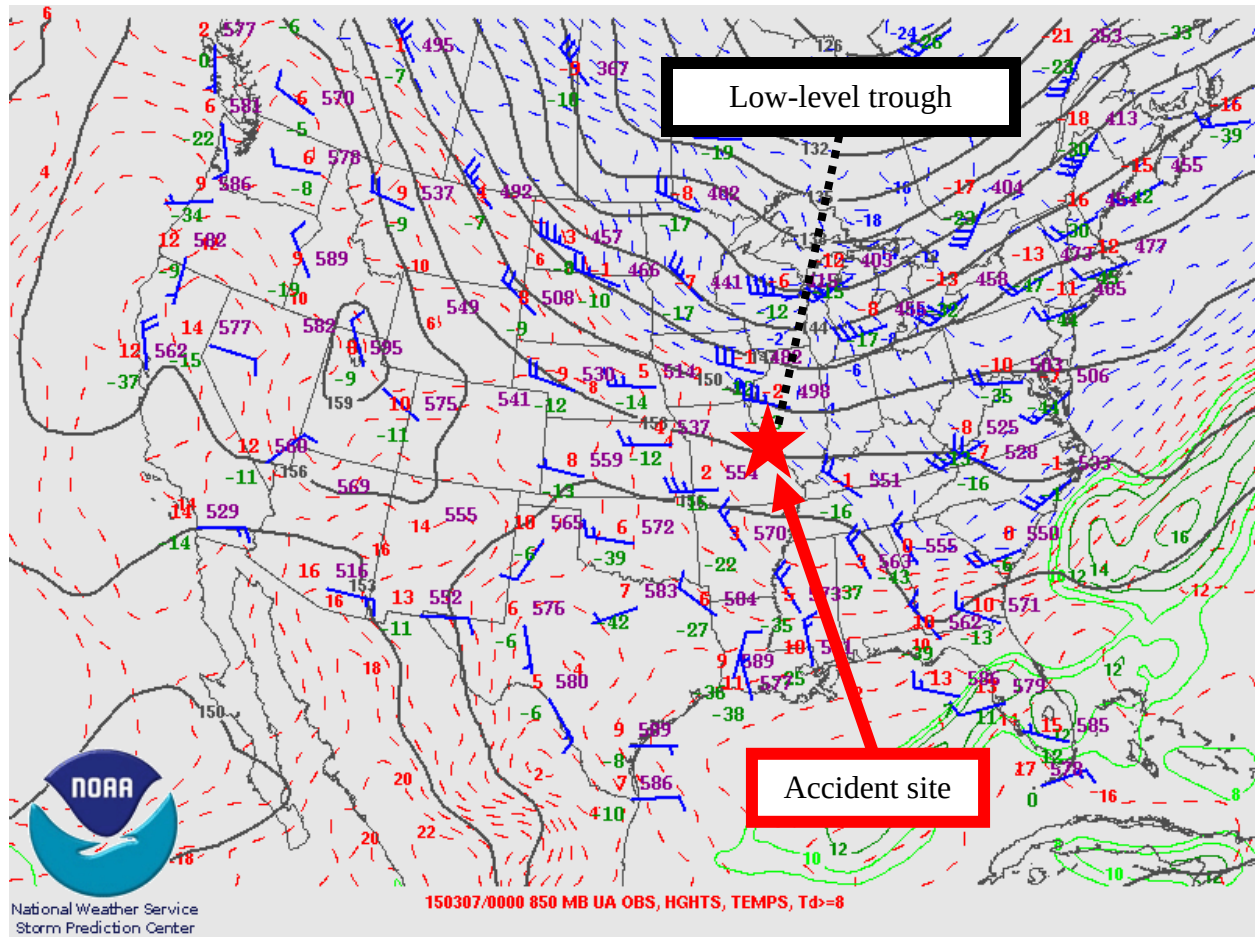


Figure 3 – 850-hPa Constant Pressure Chart for 1800 CST

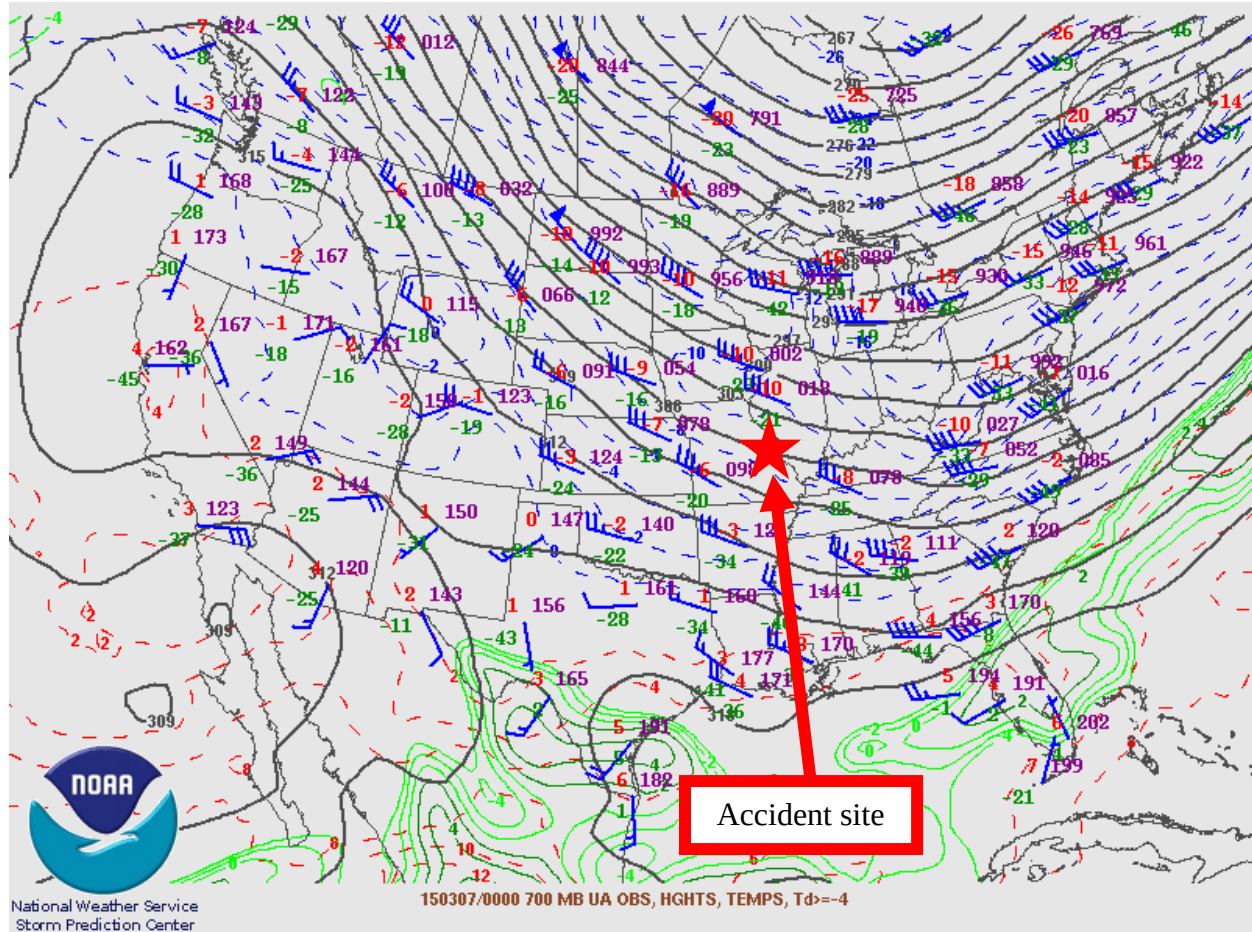


Figure 4 – 700-hPa Constant Pressure Chart for 1800 CST

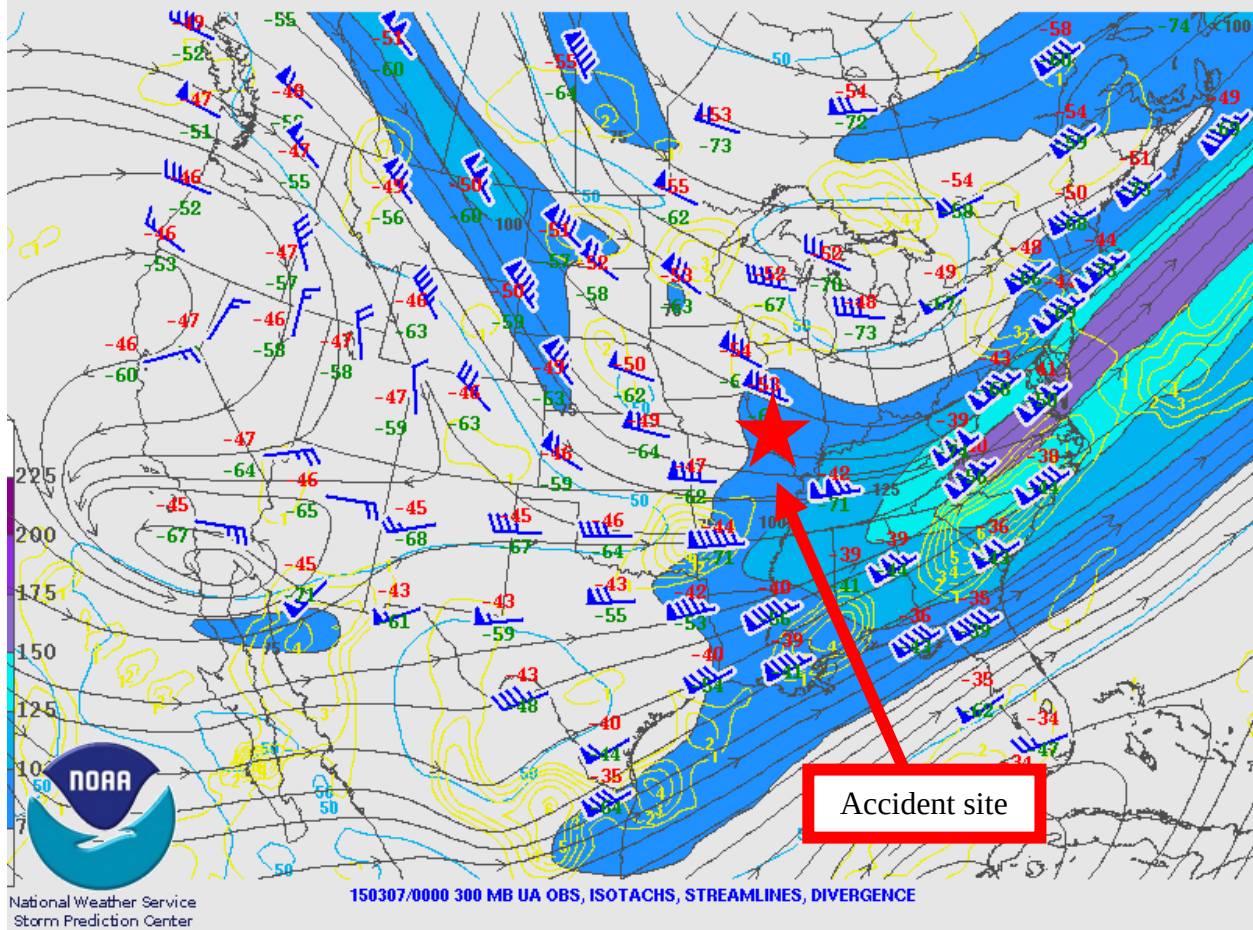


Figure 6 – 300-hPa Constant Pressure Chart for 1800 CST

2.0 Surface Observations

The area surrounding the accident site was documented utilizing official NWS Meteorological Aerodrome Reports (METARs) and Specials (SPECIs). The following observations were taken from standard code and are provided in plain language.

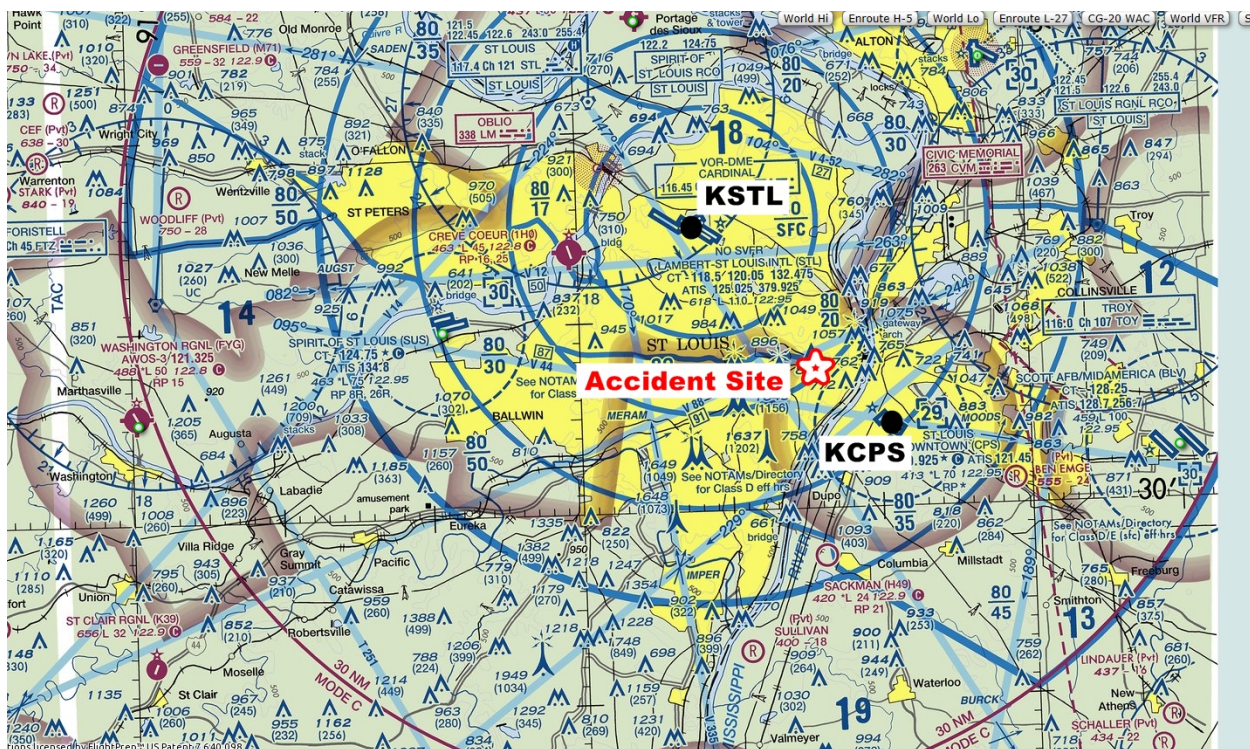


Figure 7 – Map of Missouri with the location of the accident site and surface observation sites

St. Louis Downtown Airport (KCPS) was located 1 mile east of the central business district of St. Louis, Missouri, and had an Automated Surface Observing System (ASOS)³ whose reports were supplemented by air traffic control. KCPS was the closest official observation to the accident site, was located 5 miles southeast of the accident site, at an elevation of 413 feet, and had a 0° easterly magnetic variation⁴ (figure 7). The following observations were taken and disseminated during the times surrounding the accident:⁵

[1753 CST] KCPS 062353Z 15011KT 10SM CLR 02/M06 A3029 RMK AO2
SLP261 T00171056 10083 20006 55006=

[1853 CST] KCPS 070053Z 15011KT 10SM CLR 01/M06 A3029 RMK AO2
SLP264 T00111056=

[1953 CST] KCPS 070153Z 15010KT 10SM CLR 01/M06 A3031 RMK AO2
SLP268 T00061056=

³ ASOS – Automated Surface Observing System is equipped with meteorological instruments to observe and report wind, visibility, ceiling, temperature, dewpoint, altimeter, and barometric pressure.

⁴ Magnetic variation – The angle (at a particular location) between magnetic north and true north.

⁵ The bold sections in this NWS product and the rest of products in the weather study report are to highlight the individual sections that directly reference the weather conditions that are or will affect the accident location around the accident time.

[2053 CST] KCPS 070253Z 16009KT 10SM CLR 01/M06 A3032 RMK AO2
SLP273 T00061056 53013=

**[2153 CST] KCPS 070353Z AUTO 19008KT 10SM CLR 02/M06 A3033 RMK
AO2 SLP275 T00171056 TSNO=**

**[2253 CST] KCPS 070453Z AUTO 21006KT 10SM CLR 03/M06 A3032 RMK
AO2 SLP271 T00281056 TSNO=**

ACCIDENT TIME 2310 CST

**[2353 CST] KCPS 070553Z AUTO 22007KT 10SM CLR 03/M06 A3030 RMK
AO2 SLP263 T00281056 10033 20000 400831100 58009 TSNO=**

**[0053 CST] KCPS 070653Z AUTO 22007KT 10SM CLR 03/M05 A3028 RMK
AO2 SLP258 T00331050 TSNO=**

[0153 CST] KCPS 070753Z AUTO 21006KT 10SM CLR 04/M05 A3027 RMK
AO2 SLP254 T00391050 TSNO=

[0253 CST] KCPS 070853Z AUTO 17003KT 10SM CLR 02/M05 A3026 RMK
AO2 SLP248 T00221050 58013 TSNO=

KCPS weather at 2153 CST was reported as wind from 190° at 8 knots, 10 miles visibility, clear skies below 12,000 feet above ground level (agl), temperature of 2° Celsius (C), dew point temperature of -6° C, and an altimeter setting of 30.33 inches of mercury. Remarks: automated station with a precipitation discriminator, sea level pressure 1027.5 hPa, temperature 1.7° C, dew point temperature -5.6° C, lightning detection system sensor that is not operating.

KCPS weather at 2253 CST was reported as wind from 210° at 6 knots, 10 miles visibility, clear skies below 12,000 feet agl, temperature of 3° C, dew point temperature of -6° C, and an altimeter setting of 30.32 inches of mercury. Remarks: automated station with a precipitation discriminator, sea level pressure 1027.1 hPa, temperature 2.8° C, dew point temperature -5.6° C, lightning detection system sensor that is not operating.

KCPS weather at 2353 CST was reported as wind from 220° at 7 knots, 10 miles visibility, clear skies below 12,000 feet agl, temperature of 3° C, dew point temperature of -6° C, and an altimeter setting of 30.30 inches of mercury. Remarks: automated station with a precipitation discriminator, sea level pressure 1026.3 hPa, temperature 2.8° C, dew point temperature -5.6° C, 6-hourly maximum temperature of 3.3° C, 6-hourly minimum temperature of 0.0° C, 24-hour maximum temperature 8.3° C, 24 hour minimum temperature of -10.0° C, 3-hourly pressure decrease of 0.9 hPa, lightning detection system sensor that is not operating.

KCPS weather at 0053 CST on March 7 was reported as wind from 220° at 7 knots, 10 miles visibility, clear skies below 12,000 feet agl, temperature of 3° C, dew point temperature of -5° C, and an altimeter setting of 30.28 inches of mercury. Remarks: automated station with a precipitation discriminator, sea level pressure 1025.8 hPa, temperature 3.3° C, dew point temperature -5.0° C, lightning detection system sensor that is not operating.

Lambert-St. Louis International Airport (KSTL) was located 10 miles northwest of St. Louis, Missouri, and had an ASOS whose reports were supplemented by a human observer. KSTL was located 10 miles northwest of the accident site, at an elevation of 618 feet, and had a 0° easterly magnetic variation (figure 7). The following observations were taken and disseminated during the times surrounding the accident:

[1651 CST] KSTL 062251Z 21007KT 10SM CLR 11/M05 A3026=

[1751 CST] KSTL 062351Z 20008KT 140V220 10SM FEW200 09/M05 A3026=

[1851 CST] KSTL 070051Z 20007KT 10SM FEW200 08/M05 A3027=

[1951 CST] KSTL 070151Z 12008KT 10SM CLR 02/M05 A3028=

[2051 CST] KSTL 070251Z 17009KT 10SM CLR 03/M05 A3030=

**[2151 CST] KSTL 070351Z 17008KT 10SM CLR 03/M05 A3031 RMK AO2
SLP275 T00331050=**

**[2251 CST] KSTL 070451Z 19006KT 10SM CLR 03/M06 A3031 RMK AO2
SLP271 T00281056=**

ACCIDENT TIME 2310 CST

[2351 CST] KSTL 070551Z 22012G16KT 10SM CLR 04/M05 A3029=

**[0051 CST] KSTL 070651Z 22013KT 10SM CLR 04/M05 A3027 RMK AO2
SLP256 T00441050=**

[0151 CST] KSTL 070751Z 23013KT 10SM CLR 04/M04 A3026 RMK AO2
SLP252 T00441044=

[0251 CST] KSTL 070851Z 23012KT 10SM CLR 04/M04 A3025 RMK AO2
SLP246 T00441044 57014=

KSTL weather at 2151 CST was reported as wind from 170° at 8 knots, 10 miles visibility, clear skies below 12,000 feet agl, temperature of 3° C, dew point temperature of -5° C, and an altimeter setting of 30.31 inches of mercury. Remarks: automated station with a precipitation discriminator, sea-level pressure 1027.5 hPa, temperature 3.3° C, dew point temperature -5.0° C.

KSTL weather at 2251 CST was reported as wind from 190° at 6 knots, 10 miles visibility, clear skies below 12,000 feet agl, temperature of 3° C, dew point temperature of -6° C, and an altimeter setting of 30.31 inches of mercury. Remarks: automated station with a precipitation discriminator, sea-level pressure 1027.1 hPa, temperature 2.8° C, dew point temperature -5.6° C.

KSTL weather at 2351 CST was reported as wind from 220° at 12 knots with gusts to 16 knots, 10 miles visibility, clear skies below 12,000 feet agl, temperature of 4° C, dew point temperature of -5° C, and an altimeter setting of 30.29 inches of mercury.

KSTL weather at 0051 CST on March 7 was reported as wind from 220° at 13 knots, 10 miles visibility, clear skies below 12,000 feet agl, temperature of 4° C, dew point temperature of -5° C, and an altimeter setting of 30.27 inches of mercury. Remarks: automated station with a precipitation discriminator, sea-level pressure 1025.6 hPa, temperature 4.4° C, dew point temperature -5.0° C.

The observations from KCPS and KSTL indicated both VFR⁶ ceilings and visibilities were likely at the time of the accident near the accident site. While the surface wind at KCPS was below 10 knots around the accident time, the wind at KSTL was gusting to 16 knots and the field elevation of KSTL was a few hundred feet higher than KCPS. Wind with height will be further discussed in section 3.0. The surface observations around the accident site did indicate that the surface wind was from the south and gusting around the accident time.

3.0 Upper Air Data

A North American Mesoscale (NAM) computer model upper air sounding for the accident site was generated for 2100 CST and 0000 CST on March 7. The soundings were plotted on a standard Skew-T log P diagram⁷ with the derived stability parameters included in figures 8 and 9 (with data from the surface to 800-hPa, or 6,500 feet msl.) This data was analyzed utilizing the RAOB⁸ software package. The sounding depicted the Lifted Condensation Level (LCL)⁹ between 1,500 and 2,000 feet msl and a Convective Condensation Level (CCL)¹⁰ between 9,500 and 11,000 feet. The freezing level was located above 5,000 feet. The precipitable water value was 0.36 inches.

⁶ Visual Flight Rules – Refers to the general weather conditions pilots can expect at the surface. VFR criteria means a ceiling greater than 3,000 feet agl and greater than 6 miles visibility.

⁷ 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.

⁸ RAOB – (The complete Rawinsonde Observation program) is an interactive sounding analysis program developed by Environmental Research Services, Matamoras, Pennsylvania.

⁹ Lifting Condensation Level (LCL) - The height at which a parcel of moist air becomes saturated when it is lifted dry adiabatically.

¹⁰ Convective Condensation Level (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.

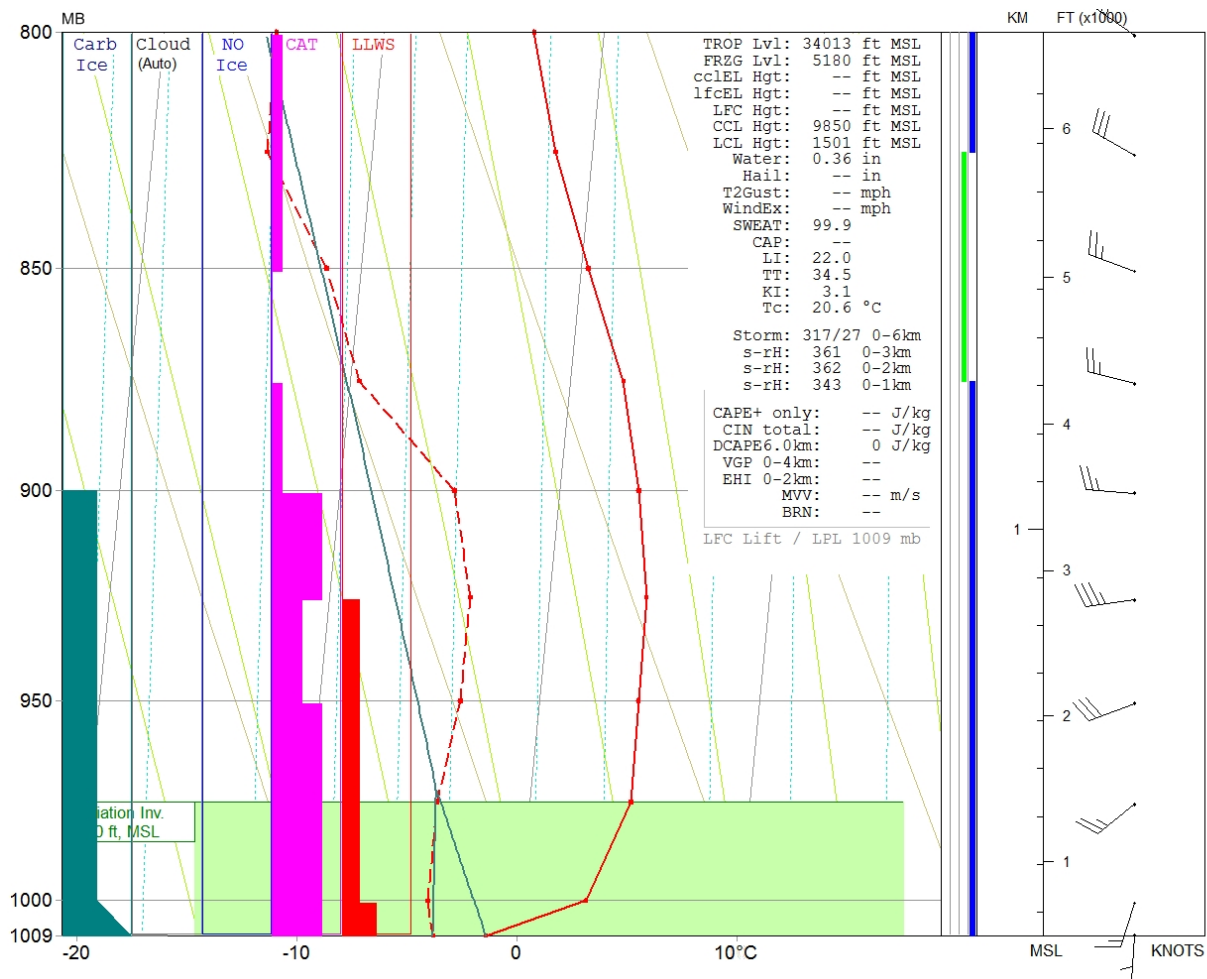


Figure 8 – 2100 CST NAM sounding

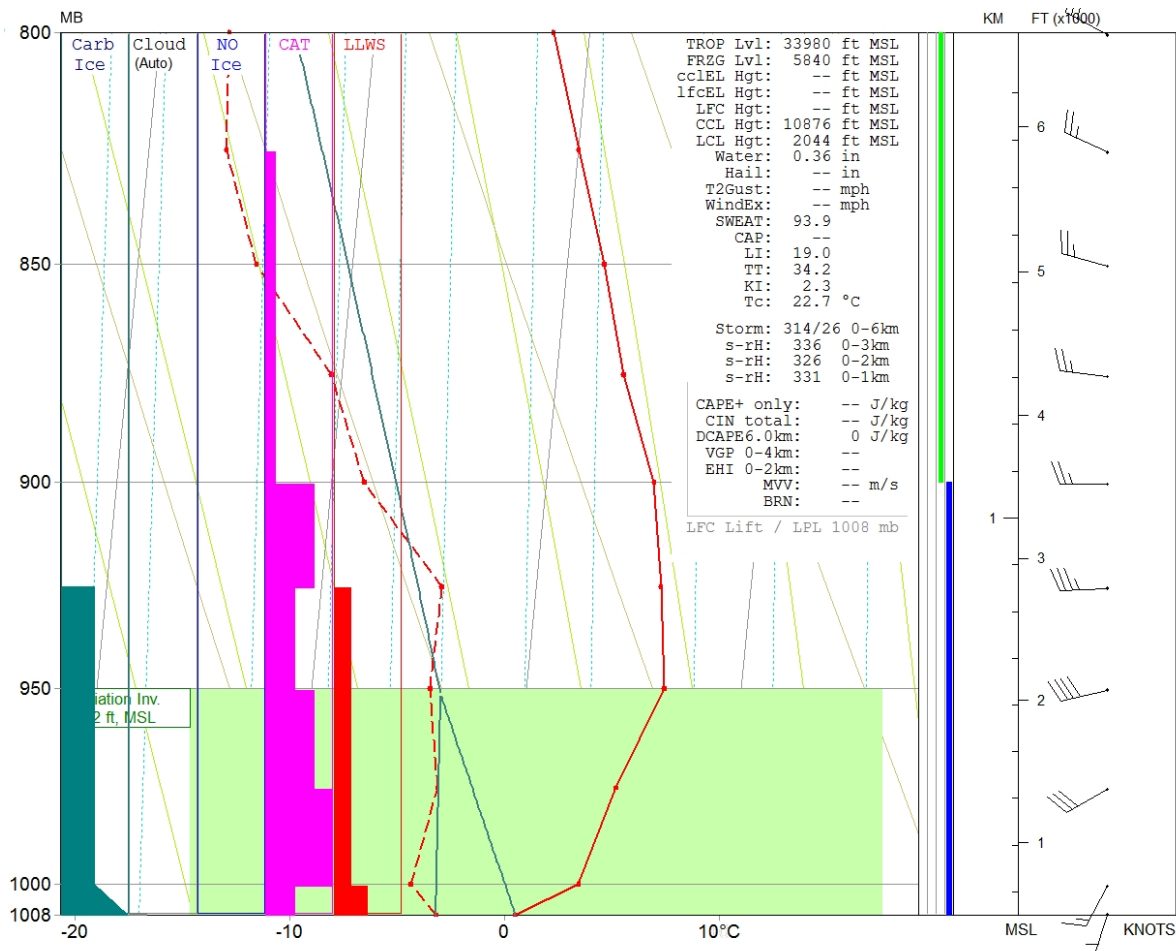


Figure 9 – 0000 CST March 7 NAM sounding

The 2100 and 0000 CST NAM soundings indicated a relatively dry vertical environment from the surface through 6,500 feet msl. This environment would not have been conducive of cloud formation as indicated by RAOB. No icing would be expected below 6,500 feet. There was an inversion at 1,500 feet msl at 2100 CST with the inversion reaching up to 2,100 feet msl by 0000 CST.

The 2100 CST sounding wind profile indicated there was a surface wind from 183° at 7 knots and the wind speed increased to 25 knots by 1,300 feet and became southwesterly. The sustained wind speed reached up to 30 knots at 2,000 feet msl. At 0000 CST similar wind conditions persisted though the inversion height now reached up to 2,100 feet msl with the wind speed around 40 knots at 2,000 feet msl, just below the top of the inversion height. This inversion height is critical with the stable air below 2,000 feet msl, as any mixing of the wind speed and direction below 2,000 feet msl would have caused moderate or greater turbulence and low-level wind shear (LLWS). RAOB also indicated likely LLWS below 3,000 feet msl at both 2100 and 0000 CST along with clear air turbulence being likely from the surface through 6,500 feet msl. As soon as the accident flight took off it would have likely experienced LLWS, clear air turbulence, and wind speeds up to 40 knots between the surface and 2,000 feet msl. Given section 1.2, these wind speeds above the surface would have been expected.

4.0 Pilot Reports

All pilot reports (PIREPs) were reviewed close to the accident site from around two hours prior to the accident time to around two hours after the accident time and no PIREPs were reported.

5.0 SIGMET and CWSU Advisories

No SIGMET was valid for the accident site at the accident time for the accident flight.

No Center Weather Service Unit (CWSU) Advisory (CWA) was valid for the accident site at the accident time.

No Meteorological Impact Statements (MIS) were valid for the accident site at the accident time.

6.0 AIRMETs

AIRMET Tango was issued at 2045 CST and valid at the accident time for the accident site. It forecasted moderate turbulence below 6,000 feet and the wind field shown in section 1.2 and section 3.0 would have likely supported moderate turbulence conditions below 6,000 feet:

WAUS43 KKCI 070245

WA3T

_CHIT WA 070245

AIRMET TANGO FOR TURB AND LLWS VALID UNTIL 070900

.

AIRMET TURB...ND SD NE MN IA

FROM 30N INL TO 50S BRD TO 30E OBH TO 40E AKO TO BFF TO 70SW RAP

TO 40NNW ISN TO 30N INL

MOD TURB BLW 070. CONDS CONTG BYD 09Z THRU 15Z.

.

AIRMET TURB...IA MO WI LM MI LH IL IN KY

FROM 40SE SSM TO YVV TO 30SE ECK TO FWA TO CVG TO 60SSE COU TO

40N SGF TO 50ESE DSM TO 20NW IOW TO 40W MKG TO 40SE SSM

MOD TURB BLW 060. CONDS CONTG BYD 09Z THRU 15Z.

.

LLWS POTENTIAL...ND SD MN IA

BOUNDED BY 80E MOT-20SSW FAR-60SSW BRD-60SSE MSP-40W FOD-40WSW

FSD-40N PIR-40NE DIK-80E MOT

LLWS EXP. CONDS CONTG BYD 09Z ENDG 09-12Z.

.

OTLK VALID 0900-1500Z

AREA 1...TURB KS OK TX

BOUNDED BY 40E LAA-20NNE OSW-40SW FSM-30SW MLC-20N SPS-20WSW TXO-

30ESE TBE-50W LBL-40E LAA

MOD TURB BTN FL280 AND FL380. CONDS CONTG THRU 15Z.

.

AREA 2...TURB ND SD NE KS MN IA WI LS MI

BOUNDED BY 50N MOT-30N INL-YQT-40SSW RHI-20ESE DSM-GLD-BFF-70SW

RAP-100SE MLS-50N MOT
MOD TURB BLW 070. CONDS CONTG THRU 15Z.

....

WAUS43 KPCI 070245

WA3Z

_CHIZ WA 070245

AIRMET ZULU FOR ICE AND FRZLVL VALID UNTIL 070900

.

AIRMET ICE...ND SD MN IA WI LS MI
FROM 90WSW YWG TO 30N INL TO YQT TO 60ESE YQT TO 40SSE ODI TO
40WNW MCW TO 60SSE BIS TO 90WSW YWG
MOD ICE BTN 030 AND 160. CONDS CONTG BYD 09Z THRU 15Z.

.

OTLK VALID 0900-1500Z...ICE MN IA WI LM LS MI LH IL IN
BOUNDED BY 30N INL-YQT-SSM-40NNE FWA-20ESE JOT-20NNE IOW-50WNW
MCW-50SW DLH-30N INL
MOD ICE BLW 160. CONDS CONTG THRU 15Z.

.

FRZLVL...RANGING FROM SFC-045 ACRS AREA

MULT FRZLVL BLW 040 BOUNDED BY 80SW YWG-40WSW BJI-60S DLH-
40SSE BAE-FWA-CVG-30SSW LOZ-20NNW ARG-50S UIN-50SSW FOD-
30SE ABR-50ENE MOT-80SW YWG

SFC BOUNDED BY 60SSE OBH-30WNW PWE-20SSW PWE-50SW PWE-40NW
SLN-80S OBH-60SSE OBH

040 BOUNDED BY 20W OBH-30ESE OBH-50ESE OBH-30W PWE-30WSW PWE-
40NE SLN-30ENE SLN-20WSW SLN-60ESE HLC-20ENE HLC-40SE MCK-
20E MCK-40ESE LBF-50E LBF-20W OBH

....

WAUS43 KPCI 070245

WA3S

_CHIS WA 070245

AIRMET SIERRA FOR IFR VALID UNTIL 070900

.

AIRMET IFR...ND MN
FROM 50N MOT TO 30NNW INL TO 70SE FAR TO 40SE BIS TO 40SSE MOT
TO 50N MOT
CIG BLW 010/VIS BLW 3SM PCPN/BR. CONDS DVLPG 03-06Z. CONDS CONTG
BYD 09Z THRU 15Z.

.

OTLK VALID 0900-1500Z...IFR ND SD MN IA WI LS
BOUNDED BY 90WSW YWG-30N INL-60ENE INL-70W YQT-30WNW ODI-20E MCW-
40W FSD-40SSE MOT-90WSW YWG
CIG BLW 010/VIS BLW 3SM PCPN/BR. CONDS CONTG THRU 15Z.

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7.0 Area Forecast

The Area Forecast issued at 2045 CST valid at the accident time forecasted clear sky conditions for the accident site:

FAUS43 KPCI 070245

FA3W

_CHIC FA 070245

SYNOPSIS AND VFR CLDS/WX

SYNOPSIS VALID UNTIL 072100

CLDS/WX VALID UNTIL 071500...OTLK VALID 071500-072100

ND SD NE KS MN IA MO WI LM LS MI LH IL IN KY

.
SEE AIRMET SIERRA FOR IFR CONDS AND MTN OBSCN.
TS IMPLY SEV OR GTR TURB SEV ICE LLWS AND IFR CONDS.
NON MSL HGTS DENOTED BY AGL OR CIG.

.
SYNOPSIS...03Z LOW PRES NWRN MN WITH WRMFNT WRN MN-WRN IA AND
CDFNT NRN ND. 12Z LOW PRES WRN LS WITH WRMFNT CNTRL WI-ERN IA-ERN
MO AND CDFNT NRN MN-CNTRL ND. 18Z LOW PRES ERN LS WITH WRMFNT LH
AND CDFNT LWR MI-NRN IL-CNTRL IA AND DMSHG CNTRL SD.

.
ND

NWRN...BKN040 TOP 070. 06Z TOP 050. OTLK...MVFR CIG.
SWRN...BKN120 TOP 140. 08Z BKN040 TOP 055. OTLK...MVFR CIG 18Z
VFR.
NERN...BKN030 TOP 140. -SN. 06Z TOP 045. WND NW G25KT. 12Z
SCT030. OTLK...VFR 20Z MVFR CIG.
SERN...BKN055 TOP 140. 08Z BKN030 TOP 060. WND NW G25KT. 13Z
SCT030. OTLK...VFR.

.
SD

NWRN...SCT CI. 07Z SCT100. 13Z SCT040. OTLK...VFR.
SWRN...SCT CI. 11Z SCT080. OTLK...VFR.
NERN...BKN100 TOP 140. 05Z SCT120. 10Z BKN030 TOP 045.
OTLK...MVFR CIG.
SERN...BKN100 TOP 140. 06Z SCT120. 13Z SCT040. OTLK...MVFR CIG.

.
NE

PNHDL...SKC. OTLK...VFR.
CNTRL...NRN PTN SCT100 SRN PTN SKC. 07Z NRN PTN SKC. OTLK...VFR.
NERN...BKN110 TOP 150. 07Z SCT110. OTLK...VFR.
SERN...SKC. OTLK...VFR.

.
KS

SKC. OTLK...VFR.

.
MN

NWRN...BKN040 TOP 130. VIS 5SM -SN. 08Z BKN025 TOP 040. AFT 13Z
WND NW G25KT. OTLK...MVFR CIG WND 19Z VFR.
NERN...BKN080 TOP 160. 07Z BKN020 TOP 140. VIS 5SM -SN. 12Z TOP
080. OTLK...MVFR CIG.
CNTRL...BKN070 TOP 130. 09Z BKN020 TOP 040. OTLK...MVFR CIG 17Z
VFR.
SRN...BKN090 TOP 160. 10Z SCT090. 14Z BKN020 TOP 040. OTLK...MVFR
CIG.

.
IA

N HLF...SCT090. 07Z BKN090 TOP 160. 12Z SCT025 SCT110.
OTLK...VFR.
S HLF...SCT100. 07Z SCT-BKN100 TOP 150. 13Z SCT100. OTLK...VFR.

.
MO

FAR NRN PTN...SCT100. 10Z SCT100 SCT CI. OTLK...VFR.
RMNDR...SKC. OTLK...VFR.

.
WI
N HLF...SCT CI. 06Z BKN070 TOP 160. 09Z BKN030 TOP 120. VIS 5SM
-SN. OTLK...MVFR CIG.
S HLF...SCT CI. 09Z BKN070 TOP 160. 14Z SCT070. OTLK...VFR.
.
LS UPR MI
W HLF...SCT130 SCT CI. 06Z BKN070 TOP 160. VIS 5SM -SN. 10Z
BKN020 TOP 150. VIS 3SM -SN. OTLK...MVFR CIG.
E HLF...SCT CI. 08Z BKN070 TOP 160. VIS 5SM -SN. 12Z BKN020 TOP
150. VIS 3SM -SN. OTLK...MVFR CIG TIL 18Z SN.
.
LM LWR MI LH
N HLF...BKN035 TOP 060. ISOL -SHSN. 09Z SCT040 BKN110 TOP FL250.
13Z BKN030 TOP 080. VIS 3-5SM -SN. OTLK...MVFR CIG SN/SHSN.
S HLF...BKN045 TOP 060. OTLK...MVFR CIG.
.
IL
NRN-CNTRL...SCT-BKN100 TOP 150. OTLK...VFR.
SRN...SKC OR SCT CI. OTLK...VFR.
.
IN
N HLF...SCT CI. 07Z BKN100 TOP 150. OTLK...VFR.
S HLF...SCT CI. 07Z SCT100. OTLK...VFR.
.
KY
WRN...SKC. OTLK...VFR.
NCNTRL-NERN...SKC. 12Z SCT150. OTLK...VFR.
SCNTRL-SERN...SKC. OTLK...VFR.
.
BEGINNING ON MARCH 8 AT 0700Z WITH CHANGE TO STANDARD TIME...CHI
AND DFW FA/S WILL BE ISSUED AT 0145Z...0945Z AND 1845Z. AIRMETS
WILL STILL BE ISSUED AT 0300Z 0900Z 1500Z AND 2100Z.
....

8.0 Terminal Aerodrome Forecast

KCPS was the closest official NWS site with a Terminal Aerodrome Forecast (TAF). The TAF valid at the time of the accident was issued at 1721 CST and was valid for a 24-hour period beginning at 1800 CST. The TAF forecasted:

TAF KCPS 062321Z 0700/0724 **18005KT P6SM SKC**
FM071500 25007KT P6SM SKC=

The KCPS forecast expected wind from 180° at 5 knots, greater than 6 miles visibility, and clear skies.

9.0 National Weather Service Area Forecast Discussion

The National Weather Service Office in St. Louis, Missouri, issued an Area Forecast Discussion (AFD) at 1721 CST. The aviation section of the AFD mentioned VFR conditions expected with a southwest surface wind at or below 12 knots through the early morning hours:

FXUS63 KLSX 062321

AFDLSX

AREA FORECAST DISCUSSION...UPDATED AVIATION

NATIONAL WEATHER SERVICE ST LOUIS MO

521 PM CST Fri Mar 6 2015

.SHORT TERM: (Through Late Tonight)

Issued at 335 PM CST Fri Mar 6 2015

Tranquil conditions expected tonight with the main forecast concern being temperatures. Leaned aoa warmer MAV guidance for most of the CWA... particularly for areas that are by and large snow-free...i.e., central and east-central Missouri. Southwest surface winds look to stay up between 7-10 knots tonight...keeping the boundary layer from decoupling and cooling off too rapidly. In areas with deep snow cover...did not stray too far guidance.

Gosselin

.LONG TERM: (Saturday through Next Friday)

Issued at 335 PM CST Fri Mar 6 2015

Should be a relatively quiet stretch of weather across the Mid-Mississippi Valley into the middle or latter half of next week. Northwest flow at the mid and upper levels will prevail until at least Monday morning with a shallow longwave trof persists over the east coast and the ridge hangs tough over the west coast. A couple of shortwaves dive southeast out of Canada across the Midwest Saturday and Sunday, but there appears to be limited moisture for these waves to work with to produce precipitation. Honestly, I'm a bit hesitant to sit on wavy northwest flow for this long without mentionable PoPs. The Sunday wave looks the most promising for precipitation across parts of northern Missouri and central Illinois with some decent warm advection ahead of it along a low level baroclinic zone. Again, moisture will be the limiting factor so have refrained from introducing higher PoPs at this time. The pattern begins to shift Monday into Tuesday as a low currently spinning over the northern Gulf of California finally gets picked up into the flow which deepens the longwave trof back across the southwest. The southwest flow aloft will allow much warmer air to move into the region. Should see temperatures pushing the mid 60s by Wednesday/Thursday. Latest runs of the medium range guidance show the southwestern low/trof edging slowly into the lower Mississippi Valley by Friday, tapping into Gulf moisture and giving us the only substantial chance for rain through the end of next week.

Carney

&&

.AVIATION: (For the 00z TAFs through 00z Saturday Evening)

Issued at 516 PM CST Fri Mar 6 2015

VFR fcst with winds at aob 12kts thru the prd.

Specifics for KSTL:

VFR fcst with SW winds at aob 12kts thru the prd.

2%

&&

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.PRELIMINARY POINT TEMPS/POPS:
Saint Louis  34 57 32 53 / 0 0 5 5
Quincy      29 49 27 47 / 0 0 5 10
Columbia    33 57 31 58 / 0 0 5 5
Jefferson City 33 59 30 58 / 0 0 5 5
Salem       22 52 29 48 / 0 5 5 5
Farmington  25 55 30 52 / 0 0 5 10
&&
.LSX WATCHES/WARNINGS/ADVISORIES:
MO...NONE.
IL...NONE.
&&
$$
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10.0 Pilot Weather Briefing

The accident company contracts with Aviation Sentry for weather briefings and attachment 1 is the weather report pulled from the night of the accident. It is not known what weather information the accident pilot reviewed or received before the accident flight. The weather report contained only weather information regarding surface weather conditions (attachment 1) and did not contain any information about the AIRMET valid for moderate turbulence or other gusty wind conditions just above the surface.

11.0 Astronomical Data

The astronomical data obtained from the United States Naval Observatory for the accident site on March 6, 2015, indicated the following:

SUN

Begin civil twilight	0600 CST
Sunrise	0626 CST
Sun transit	1212 CST
Sunset	1759 CST
End civil twilight	1825 CST

MOON

Moonrise	1810 CST on preceding day
Moon transit	0030 CST
Moonset	0644 CST
Moonrise	1905 CST

The phase of the moon was Waning Gibbous with 99% of the Moon's visible disk illuminated. The moonlight would have aided visibility conditions during the accident flight with no cloud cover and 99% of the Moon's visible disk illuminated.

F. LIST OF ATTACHMENTS

Attachment 1 – Weather Report from Aviation Sentry the night of the accident.

Paul Suffern
NTSB, AS-30