



## **NATIONAL TRANSPORTATION SAFETY BOARD**

Office of Aviation Safety  
Washington, D.C. 20594

February 6, 2020

### **Weather Study**

# **METEOROLOGY**

CEN20FA034

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## **A. ACCIDENT**

Location: Flower Pot, Arizona  
Date: December 8, 2019  
Time: about 1300 Mountain standard time  
2000 Universal Coordinated Time (UTC)  
Airplane: Mooney M20C; Registration: N5557Q

## **B. METEOROLOGIST**

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Operational Factors Division (AS-30)  
National Transportation Safety Board

## **C. SUMMARY**

On December 8, 2019, about 1300 mountain standard time, a Mooney model M20C airplane, N5557Q impacted terrain about 2 nm southwest of Flower Pot, Arizona. The pilot was fatally injured and the airplane was destroyed by impact forces and a postimpact fire. The aircraft was registered to and operated by the pilot under the provisions of 14 *Code of Federal Regulations* Part 91 as a personal flight. Marginal visual meteorological conditions to instrument meteorological conditions due to mountain obscuration prevailed for the flight, which was not on a flight plan. The flight originated from the Flagstaff Pulliam Airport (KFLG), Flagstaff, Arizona, at an unconfirmed time, and was destined for the Deer Valley Airport (KDVT), Phoenix, Arizona.

## **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 from the Washington D.C. office, collecting data from official National Weather Service (NWS) sources including the Weather Prediction Center (WPC) and the National Center for Environmental Information (NCEI). All times are Mountain standard time (MST) based upon the 24-hour clock, local time is -7 hours from UTC, and UTC=Z. NWS airport and 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 34.479444° N and longitude 111.989167° W, at an elevation of 4,655 ft.

## **E. WEATHER 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 Weather Prediction Center (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 joint NWS and Federal Aviation Administration (FAA) Advisory Circular “Aviation Weather Services”, AC 00-45H change 2.

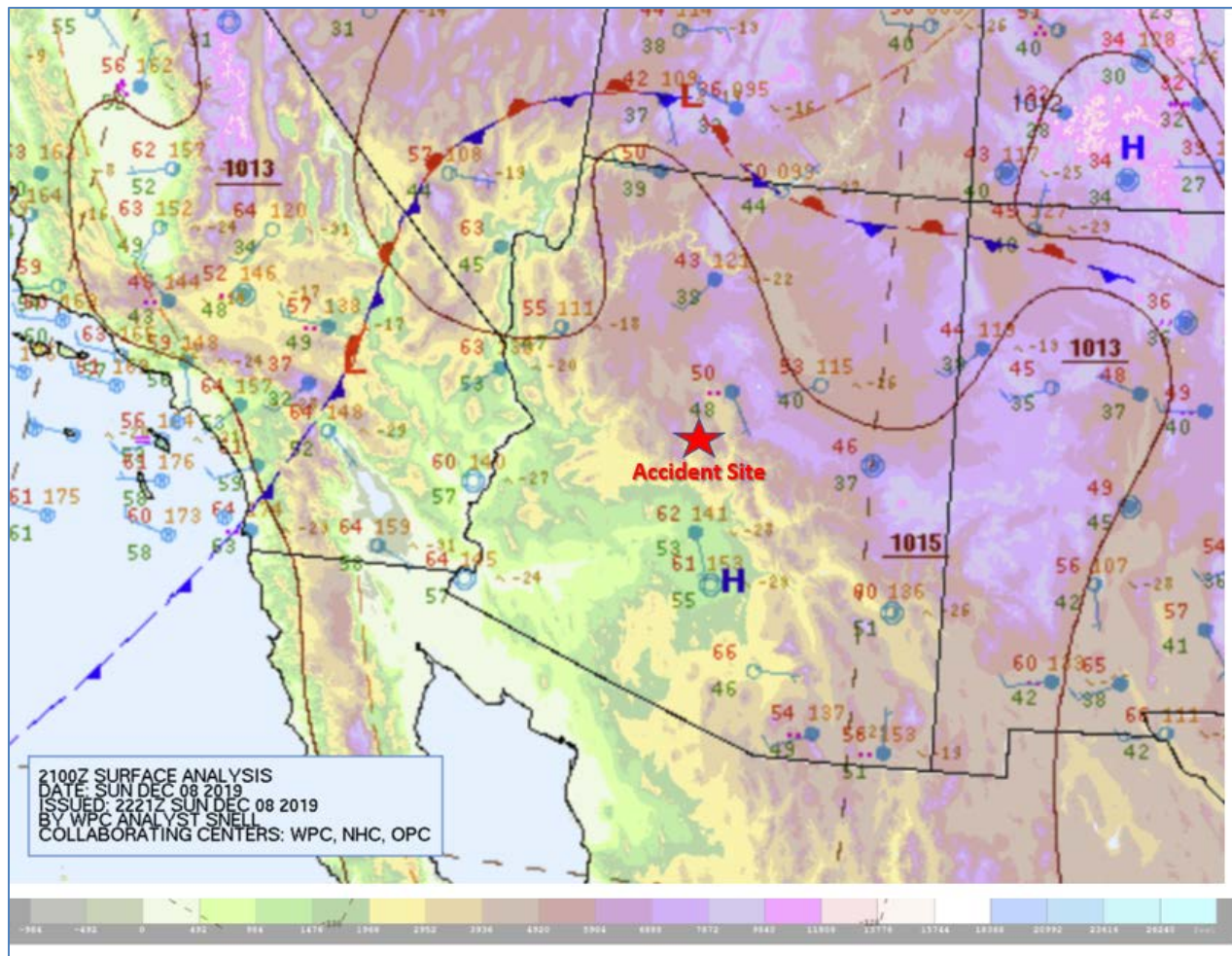
#### **1.1 Surface Analysis Chart**

The southwest section of the NWS Surface Analysis Chart for 1400 MST (2100Z) is included as figure 1 with the approximate accident site marked by a red star. The chart depicted a Pacific weather system<sup>1</sup> with a low pressure system at 1013-hectopascals (hPa)<sup>2</sup> over southern California with a dissipating cold front extending southwest. A stationary front extended northeast from the low into southern Nevada, and Utah, where another low pressure system at 1009-hPa was located. A developing stationary front (frontogenesis) was depicted from the Utah low pressure system into northern Arizona and New Mexico. A high pressure system was located in southern Arizona at 1015-hPa, with another high at 1013-hPa over southwest Colorado. The accident site was located in the warm air sector south of the stationary fronts in an area of a weak pressure gradient over Arizona.

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<sup>1</sup> As indicated in section 7.2 of this report, the NWS Weather Forecast Office indicated that this Pacific weather system and its upper level support was expected to bring rain and mountain snow showers across northern Arizona during the period.

<sup>2</sup> Hectopascals is the new NWS reference for reporting sea level pressure and is interchangeable with the former term millibar (mb) with the same units. Standard sea-level pressure is 1013.25-hPa at 59° Fahrenheit (F) or 15° Celsius (C).



**Figure 1 - Southwest section of NWS Surface Analysis Chart for 1400 MST**

The station models on the surface analysis chart depicted temperatures ranging from the 40's °F over northern Arizona in the vicinity of the Grand Canyon to the mid 60's °F over southern Arizona. The closest station model to the accident site was from Sedona immediately north-northeast of the accident site, and depicted a southerly wind of 5 knots, light rain, overcast clouds, with a temperature of 50° F and a dew point temperature of 48° F. The station model for Phoenix immediately south of the accident site also indicated light southerly winds, overcast sky cover, with a temperature of 62° F, and a dew point of 53° F.

## **1.2 National Composite Radar Mosaic**

A section of the NWS National Composite Radar Mosaic for 1300 MST is included as figure 2 with the approximate accident site marked by a red star. The image depicted several bands of light intensity echoes extending Arizona during the period, with several bands near the Flagstaff and the Phoenix area, and south of the Prescott with no significant weather echoes within 10 miles of the accident site. The accident site was located approximately 1 mile east of Interstate highway 17, which is depicted on the chart.

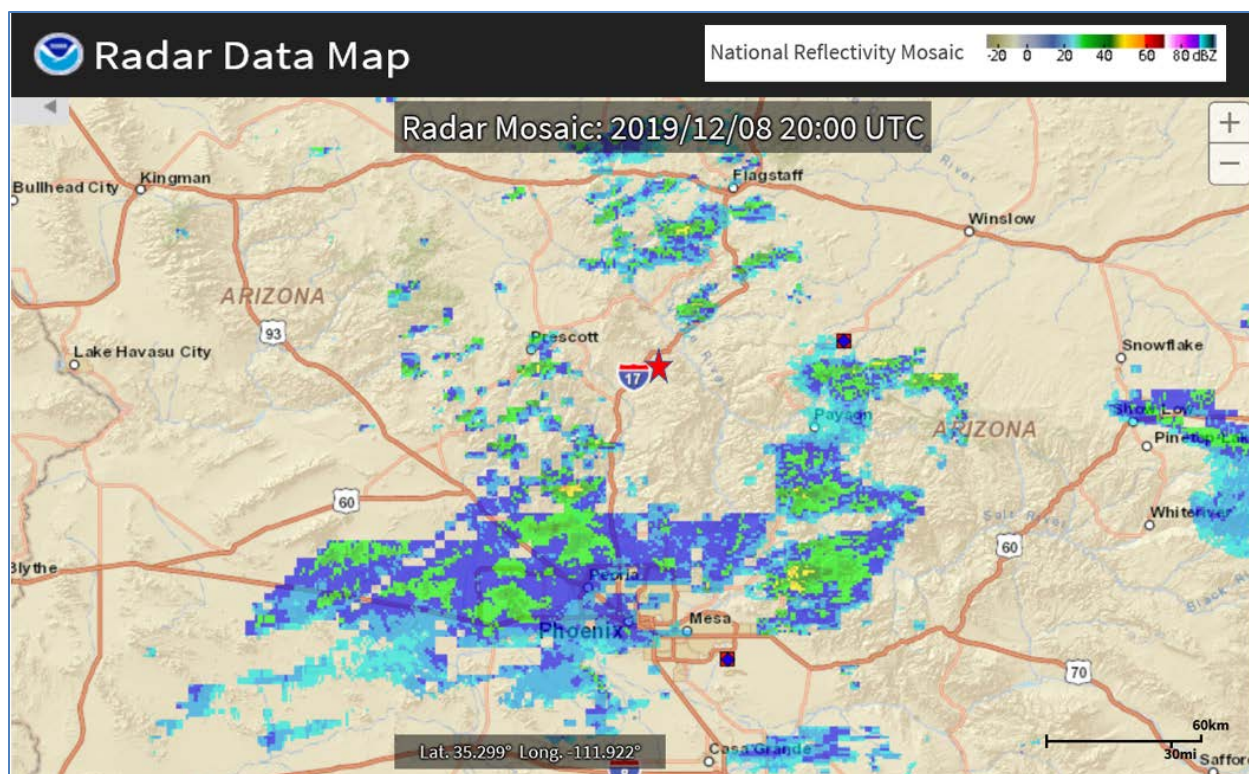


Figure 2 – NWS National Composite Radar Mosaic for 1300 MST

## 2.0 Observations

The official observations issued surrounding the accident site were documented using standard meteorological aerodrome reports (METARs) and specials (SPECIs). Cloud heights are reported above ground level (agl) in the following section, and the magnetic variation was estimated at 11° east based on the latest sectional chart for the area. The terrain ranged from 5,420 ft to the north of the accident site to 6,525 ft immediately southeast<sup>3</sup>.

### 2.1 Flagstaff, Arizona

The accident airplane departed from Flagstaff Pulliam Airport (KFLG), Flagstaff, Arizona, earlier that morning, at an elevation of 7,015 ft. The airport was located approximately 42 miles north-northeast of the accident site. The airport had an Automated Weather Observation System (AWOS), which was augmented by air traffic control personnel as required. The following conditions were reported at the approximate time of departure.

*Weather observation for KFLG at 1257 MST, wind from 230° at 15 knots, visibility 10 miles or more, scattered clouds at 1,000 ft agl, ceiling broken at 1,800 ft, overcast at 4,100 ft, temperature 6° C, dew point temperature 3° C, altimeter 30.07 inches of mercury (Hg). Remarks: automated station with a precipitation discriminator, rain ended at 1222 MST*

<sup>3</sup> The maximum elevation figure (MEF) depicted on the sectional chart representing the highest elevation within a quadrant in the vicinity of the accident site was 7,200 ft.

*and began again at 1237 MST and ended at 1245 MST, sea level pressure 1014.1-hPa, hourly precipitation trace (less than 0.01 inch), temperature 5.6° C, dew point 3.3° C.*

The general flight categories<sup>4</sup> and raw observations from approximately 0500<sup>5</sup> through 1500 MST were as follows. The observations in bold type are provided above:

**MVFR** METAR KFLG 081157Z AUTO 25008KT 10SM SCT017 BKN028 OVC095 04/04 A3010 RMK AO2 RAE50 SLP152 P0004 60016 70019 T00440039 10050 20039 58007

**MVFR** SPECI KFLG 081226Z AUTO 26010G17KT 7SM -RA BKN013 OVC019 04/02 A3010 RMK AO2 RAB00 P0003 T00390022

**MVFR** SPECI KFLG 081245Z AUTO 24015G25KT 10SM SCT014 BKN019 OVC044 04/02 A3010 RMK AO2 RAB00E43 P0004 T00440022

VFR SPECI KFLG 081255Z AUTO 25012G19KT 10SM FEW017 BKN048 OVC070 04/02 A3010 RMK AO2 RAB00E43 P0004

VFR METAR KFLG 081257Z AUTO 25011G19KT 10SM FEW015 BKN048 OVC070 04/02 A3010 RMK AO2 RAB00E43 SLP156 P0004 T00390022

VFR METAR KFLG 081357Z 25008KT 8SM -RA FEW014 BKN042 OVC090 04/02 A3011 RMK AO2 RAB52 SLP159 P0000 T00390022

**MVFR** SPECI KFLG 081415Z 25006KT 8SM -RA FEW011 BKN022 OVC040 03/02 A3011 RMK AO2 P0004 T00280022

VFR SPECI KFLG 081427Z 25006KT 10SM FEW011 BKN041 OVC085 03/02 A3010 RMK AO2 RAE21 P0005 T00330022

VFR METAR KFLG 081457Z 25005KT 10SM BKN100 OVC110 03/02 A3011 RMK AO2 RAE21 SLP165 P0005 60009 T00330017 50003

VFR METAR KFLG 081557Z 22012KT 10SM SCT012 OVC095 04/03 A3010 RMK AO2 RAB08E21 SLP157 P0000 T00390028

**MVFR** SPECI KFLG 081606Z 21011KT 10SM BKN011 BKN016 OVC100 04/03 A3010 RMK AO2 T00390028

**IFR** SPECI KFLG 081626Z 22013KT 10SM BKN006 BKN011 OVC100 04/03 A3010 RMK AO2 CIG 004V009

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<sup>4</sup> As defined by the NWS and the FAA Aeronautical Information Manual (AIM) section 7-1-7 defines the following general flight categories based on weather conditions reported:

- 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.

\*\*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.

<sup>5</sup> The accident pilot contacted the FAA Automated Flight Service Station as early as 0830 MST inquiring about the weather conditions along the route of flight, so conditions from approximately 0500 through 1500 MST were documented documenting the conditions reported during that period through the time and immediately after the accident.

T00390033

**IFR** METAR KFLG 081657Z 22012KT 10SM BKN008 OVC014 04/03 A3010 RMK AO2 CIG 005V010 SLP159 T00440033

**MVFR** SPECI KFLG 081710Z 21014KT 10SM SCT007 BKN012 OVC017 04/03 A3009 RMK AO2 T00440033

**IFR** SPECI KFLG 081718Z 21013KT 10SM BKN007 BKN010 OVC016 04/03 A3009 RMK AO2 T00440033

**MVFR** SPECI KFLG 081749Z 23017G25KT 10SM SCT008 BKN016 OVC038 05/03 A3009 RMK AO2 T00500033

**MVFR** METAR KFLG 081757Z 23016G21KT 10SM -RA SCT008 BKN015 OVC031 05/03 A3009 RMK AO2 RAB51 SLP153 P0000 60009 T00500033 10050 20028 56004

**MVFR** SPECI KFLG 081833Z 22016KT 10SM SCT012 BKN018 BKN041 05/04 A3007 RMK AO2 RAE22 P0000 T00500039

**MVFR** METAR KFLG 081857Z 23015KT 10SM SCT010 BKN018 OVC041 06/03 A3007 RMK AO2 RAE22B37E45 SLP141 P0000 T00560033

#### **Departure**

**MVFR** SPECI KFLG 081955Z 23015KT 10SM BKN013 OVC026 05/03 A3004 RMK AO2 RAB04E34 P0001

**MVFR** METAR KFLG 081957Z 23015KT 10SM BKN013 BKN019 05/03 A3004 RMK AO2 RAB04E34 SLP131 P0001 T00500033

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**MVFR** SPECI KFLG 082016Z 23013KT 6SM -RA BR SCT012 BKN017 OVC033 04/03 A3002 RMK AO2 RAB06 P0000 T00440033

**MVFR** METAR KFLG 082057Z 26010G19KT 4SM -RA BR BKN019 BKN026 BKN033 03/02 A3001 RMK AO2 RAB06 SLP124 P0003 60004 T00330017 57016

**IFR** SPECI KFLG 082132Z 23007KT 2SM RA BR BKN019 OVC024 02/01 A3000 RMK AO2 P0013 T00220011

**MVFR** SPECI KFLG 082142Z 24005KT 9SM -RA SCT015 OVC021 02/02 A3001 RMK AO2 P0014 T00220017

**MVFR** SPECI KFLG 082154Z 24004KT 10SM BKN013 OVC021 03/02 A2999 RMK AO2 RAE44UPB44E46 P0014

The observations from KFLG indicated that MVFR conditions prevailed at the time of departure and the time of the accident with several periods of IFR conditions reported prior to departure and after the accident due to low ceilings or visibilities in moderate rain.

## **2.2 Sedona, Arizona**

Sedona Airport (KSEZ), Sedona, Arizona was generally along the route of flight and was located about 24 miles north-northeast of the accident site at an elevation of 4,830 ft. The airport also had an AWOS but was not augmented by any human observers and issued observations every 20-minutes. The following conditions were reported at the approximate time of the accident.

*Weather observation for KSEZ at 1255 MST, automated, wind from 160° at 8 knots, visibility 10 miles or more, scattered clouds at 1,000 ft agl, ceiling broken at 1,800 ft, overcast at 6,000 ft, temperature 10° C, dew point temperature 9° C, altimeter 30.04 inches of Hg. Remarks: automated station with a precipitation discriminator.*

*Weather observation for KSEZ at 1315 MST, automated, wind from 150° at 9 knots, visibility 10 miles or more, scattered clouds at 1,800 ft agl, scattered clouds at 6,000 ft, ceiling overcast at 7,000 ft, temperature 10° C, dew point temperature 8° C, altimeter 30.02 inches of Hg. Remarks: automated station with a precipitation discriminator, lightning distant north.*

*Weather observation for KSEZ at 1335 MST, automated, wind from 150° at 8 knots, visibility 10 miles or more, scattered clouds at 1,100 ft agl, ceiling broken at 7,000 ft, overcast at 8,000 ft, temperature 10° C, dew point temperature 8° C, altimeter 30.02 inches of Hg. Remarks: automated station with a precipitation discriminator.*

*Weather observation for KSEZ at 1355 MST, automated, wind from 150° at 7 knots, visibility 10 miles in light rain, ceiling broken at 900 f agl, broken at 1,700 ft, overcast at 6,500 ft, temperature 10° C, dew point temperature 8° C, altimeter 30.01 inches of Hg. Remarks: automated station with a precipitation discriminator.*

The following general flight categories and conditions were reported surrounding the period from about 0500 MST through 1430 MST.

*LIFR METAR KSEZ 081155Z AUTO 21005KT 1/4SM FG OVC005 08/08 A3010 RMK AO2*

*LIFR METAR KSEZ 081215Z AUTO 19005KT 3/4SM -RA OVC003 08/08 A3009 RMK AO2 VIS 1/4V5*

*LIFR METAR KSEZ 081235Z AUTO 00000KT 7SM OVC003 08/08 A3010 RMK AO2*

*LIFR METAR KSEZ 081255Z AUTO 00000KT 5SM BR OVC003 08/08 A3010 RMK AO2*

*LIFR METAR KSEZ 081315Z AUTO 12004KT 3/4SM BR OVC003 08/08 A3009 RMK AO2*

*LIFR METAR KSEZ 081335Z AUTO 14005KT 3/4SM BR OVC005 08/08 A3009 RMK AO2*

*IFR METAR KSEZ 081355Z AUTO 28011KT 3SM -RA OVC005 08/08 A3010 RMK AO2 P0001*

*MVFR METAR KSEZ 081415Z AUTO 00000KT 10SM -RA SCT003 BKN028 OVC060 08/07 A3010 RMK AO2 P0001*

*VFR METAR KSEZ 081435Z AUTO 14005KT 10SM SCT029 BKN070 OVC085 08/08 A3009 RMK AO2 P0001*

*VFR METAR KSEZ 081455Z AUTO 10003KT 10SM SCT028 BKN090 BKN110 08/08 A3010 RMK*

*VFR METAR KSEZ 081515Z AUTO 13004KT 10SM CLR 08/08 A3009 RMK AO2*

*VFR METAR KSEZ 081535Z AUTO 00000KT 10SM SCT016 SCT048 BKN090 08/07 A3010 RMK*

*MVFR METAR KSEZ 081555Z AUTO 09006KT 3SM RA SCT014 BKN040 OVC075 08/08 A3009 RMK AO2 P0003*

**MVFR** METAR KSEZ 081615Z AUTO 02003KT 10SM BKN012 BKN020 OVC040 08/08 A3010 RMK AO2

**MVFR** METAR KSEZ 081635Z AUTO 13004KT 10SM BKN010 BKN014 OVC085 08/08 A3011 RMK AO2

**MVFR** METAR KSEZ 081655Z AUTO 14004KT 10SM BKN010 BKN049 OVC085 08/08 A3011 RMK AO2

**MVFR** METAR KSEZ 081715Z AUTO 16010KT 10SM BKN012 BKN018 OVC085 09/08 A3011 RMK AO2

**MVFR** METAR KSEZ 081735Z AUTO 15004KT 10SM SCT010 BKN017 OVC095 08/08 A3011 RMK AO2

**MVFR** METAR KSEZ 081755Z AUTO 19003KT 10SM SCT012 BKN017 OVC044 09/08 A3011 RMK AO2=

**VFR** METAR KSEZ 081815Z AUTO 16006KT 10SM SCT016 BKN035 OVC050 09/08 A3010 RMK AO2=

**MVFR** METAR KSEZ 081835Z AUTO 15009KT 10SM BKN018 BKN039 OVC085 09/08 A3008 RMK AO2=

**MVFR** METAR KSEZ 081855Z AUTO 15009G15KT 10SM BKN012 OVC017 09/08 A3008 RMK AO2=

**MVFR** METAR KSEZ 081915Z AUTO 16010KT 10SM BKN010 OVC018 09/08 A3006 RMK AO2=

**MVFR** METAR KSEZ 081935Z AUTO 15006KT 10SM SCT010 OVC020 10/08 A3005 RMK AO2=

**MVFR** METAR KSEZ 081955Z AUTO 16008KT 10SM SCT010 BKN018 OVC060 10/09 A3004 RMK AO2=

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**VFR** METAR KSEZ 082015Z AUTO 15009KT 10SM SCT018 SCT060 OVC070 10/08 A3002 RMK AO2 LTG DSNT N=

**VFR** METAR KSEZ 082035Z AUTO 15008KT 10SM SCT011 BKN070 OVC080 10/08 A3002 RMK AO2=

**IFR** METAR KSEZ 082055Z AUTO 15007KT 10SM -RA BKN009 BKN017 OVC065 10/09 A3001 RMK AO2=

**IFR** METAR KSEZ 082115Z AUTO 16008KT 10SM -RA OVC009 10/09 A3000 RMK AO2=

**IFR** METAR KSEZ 082135Z AUTO 16007KT 10SM OVC007 10/08 A3000 RMK AO2=

KSEZ was the closest station along the route of flight and the accident site and reported LIFR conditions in the early morning with MVFR conditions at the time of the accident. A short period of VFR conditions was reported in the hour immediately after the accident before deteriorating to IFR conditions after 1355 MST due to low ceilings with light rain.

## **2.3 Prescott, Arizona**

Prescott Regional Airport – Ernest A. Love Field (KPRC), Prescott, Arizona, was located approximately 24 miles west-northwest of the accident site at an elevation of 5,045 ft. The airport had an Automated Surface Observation System (ASOS) and was augmented by air traffic control personnel. The following conditions were reported surrounding the time of the accident.

*Weather observation for KPRC at 1253 MST, wind from 230° at 12 knots, visibility 10 miles or more, a few clouds at 2,000 ft, scattered clouds at 3,900 ft, scattered clouds at 5,500 ft, temperature 11° C, dew point temperature 6° C, altimeter 30.03 inches of Hg.*

*Remarks: automated station with a precipitation discriminator, rain began at 1237 and ended at 1247 MST, sea level pressure 1013.0-hPa, hourly precipitation a trace, temperature 10.6° C, dew point 5.6° C.*

*Weather observation for KPRC at 1353 MST, wind from 270° at 9 knots, visibility 10 miles in light rain, scattered clouds at 1,500 ft, ceiling broken at 3,000 ft, overcast at 7,000 ft, temperature 10° C, dew point temperature 6° C, altimeter 30.01 inches of Hg. Remarks: automated station with a precipitation discriminator, rain began at 1349 MST, sea level pressure 1012.0-hPa, hourly precipitation a trace, 3-hour precipitation less than 0.01 inches, temperature 10.0° C, dew point 6.1° C, 3-hour pressure tendency fallen 2.3-hPa.*

*Special weather observation for KPRC at 1407 MST, wind from 250° at 14 knots gusting to 19 knots, visibility 1 3/4 miles in moderate rain, a few clouds at 2,200 ft, ceiling broken at 4,000 ft, overcast at 9,500 ft, temperature 8° C, dew point temperature 5° C, altimeter 30.01 inches of Hg. Remarks: automated station with a precipitation discriminator, hourly precipitation (since 1353 MST) 0.06 inches, temperature 7.8° C, dew point 5.0° C.*

The following general flight categories and conditions were reported surrounding the period from about 0500 MST through 1530 MST.

VFR METAR KPRC 081153Z AUTO 21006KT 10SM FEW018 FEW100 BKN120 09/08 A3008 RMK AO2  
RAB1059E09 SLP145 P0000 60000 70005 T00940078 10100 20072 58008

VFR METAR KPRC 081253Z VRB04KT 10SM SCT022 SCT060 BKN085 09/07 A3009 RMK AO2 RAB14E25  
SLP151 P0000 T00940072

VFR METAR KPRC 081353Z 19011KT 10SM FEW019 SCT042 OVC110 09/07 A3006 RMK AO2 RAB01E41  
SLP143 P0002 T00940067

VFR METAR KPRC 081453Z 22007KT 10SM SCT015 BKN060 BKN090 09/06 A3008 RMK AO2 SLP150 60002  
T00940061 55001

VFR METAR KPRC 081553Z 21010KT 10SM SCT015 BKN060 BKN090 10/06 A3009 RMK AO2 SLP152\  
T01000061

VFR METAR KPRC 081653Z COR 17006KT 10SM FEW028 SCT041 BKN120 10/06 A3009 RMK AO2 SLP153  
T01000061

VFR METAR KPRC 081753Z 20008KT 10SM BKN110 10/06 A3009 RMK AO2 SLP152 60002 T01000056 10106  
20089 50002=

VFR METAR KPRC 081853Z 21008KT 10SM FEW120 11/06 A3006 RMK AO2 SLP137 T01110056=

VFR METAR KPRC 081953Z 23012KT 10SM FEW020 SCT039 SCT055 11/06 A3003 RMK AO2 RAB37E47  
SLP130 P0000 T01060056=

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**MVFR** METAR KPRC 082053Z 27009KT 10SM -RA SCT015 BKN030 OVC070 10/06 A3001 RMK AO2 RAB49  
SLP120 P0000 60000 T01000061 56023=

**IFR** SPECI KPRC 082107Z 25014G19KT 1 3/4SM RA FEW022 BKN040 OVC095 08/05 A3001 RMK AO2

**P0006 T00780050=**

VFR SPECI KPRC 082127Z 25011KT 10SM RA FEW014 BKN031 OVC038 08/06 A3001 RMK AO2 P0015  
T00780056=

MVFR SPECI KPRC 082140Z 29007KT 10SM BKN028 BKN036 OVC047 08/06 A3000 RMK AO2 RAE40 P0015  
T00780056=

MVFR METAR KPRC 082153Z 31006KT 6SM BR BKN020 BKN030 OVC040 08/06 A3000 RMK AO2 RAE40  
SLP123 P0015 T00830061=

VFR SPECI KPRC 082223Z 22008KT 10SM -RA FEW022 SCT026 BKN050 09/06 A3000 RMK AO2 RAB14  
P0000 T00890061=

MVFR SPECI KPRC 082230Z 23004KT 10SM FEW020 BKN024 BKN031 09/06 A3000 RMK AO2 RAB14E24  
P0000 T00890061=

The observations from KPRC reported VFR conditions at the time of the accident with MVFR to IFR conditions reported immediately in the hour after the accident with light to moderate rain.

## 2.4 Phoenix, Arizona

The planned destination was Phoenix Deer Valley Airport (KDVT), Phoenix, Arizona, located 48 miles south of the accident site at an elevation of 1,478 ft. The airport had an ASOS and was augmented by tower personnel as required. The following conditions were reported between 0500 through 1500 MST.

*Weather observation for KDVT at 1253 MST, wind from 110° at 8 knots, visibility 10 miles or more, a few clouds at 9,000 ft, ceiling broken at 11,000 ft, temperature 14° C, dew point 13° C, altimeter 29.98 inches of Hg. Remarks: automated station with a precipitation discriminator, rain ended at 1241 MST, sea level pressure 1014.1-hPa, hourly precipitation 0.01 inches, temperature 14.4° C, dew point 12.8° C.*

The raw observations surrounding the period were as follows:

MVFR METAR KDVT 081153Z AUTO 07003KT 10SM OVC025 13/12 A3005 RMK AO2 SLP163 60012 70029  
T01280122 10133 20122 58014

MVFR METAR KDVT 081253Z AUTO 00000KT 10SM -RA OVC022 13/13 A3006 RMK AO2 RAB45 SLP167 P0000  
T01330128

MVFR METAR KDVT 081353Z 00000KT 10SM OVC020 13/13 A3005 RMK AO2 RAE1255 SLP163

VFR SPECI KDVT 081446Z 07004KT 9SM -RA SCT023 SCT044 OVC090 13/13 A3006 RMK AO2 RAB17  
P0004 T01330128

VFR METAR KDVT 081453Z 36005KT 10SM -RA SCT023 SCT043 OVC095 13/13 A3007 RMK AO2 RAB17  
SLP171 P0004 60004 T01330128 53006

VFR METAR KDVT 081553Z 14008KT 10SM FEW021 SCT090 OVC110 14/12 A3005 RMK AO2 RAE04 SLP165  
P0000 T01390122

*MVFR METAR KDVT 081653Z 34003KT 10SM BKN022 OVC110 14/13 A3008 RMK AO2 SLP174 T01440128*

*VFR SPECI KDVT 081729Z 02003KT 10SM SCT024 BKN039 OVC110 15/12 A3006 RMK AO2 T01500122*

*VFR METAR KDVT 081753Z 04005KT 10SM FEW040 OVC110 15/12 A3005 RMK AO2 SLP166 60004  
T01500122 10150 20133 58005*

*MVFR SPECI KDVT 081835Z 24003KT 10SM -RA BKN026 BKN044 OVC100 15/12 A3007 RMK AO2 RAB35  
P0000 T01500122*

*VFR METAR KDVT 081853Z 00000KT 10SM -RA SCT026 BKN044 OVC090 15/12 A3006 RMK AO2 RAB35  
SLP168 P0000 T01500122*

***VFR METAR KDVT 081953Z 11008KT 10SM FEW090 BKN110 14/13 A2998 RMK AO2 RAE41 SLP141  
P0001 T01440128***

#### *Accident 2000Z*

*VFR METAR KDVT 082053Z COR VRB06KT 8SM -RA OVC080 14/13 A2998 RMK AO2 RAB09 SLP142 P0001  
60002 T01440128 55025*

*VFR SPECI KDVT 082126Z 27004KT 8SM -RA SCT009 SCT043 OVC095 14/13 A2999 RMK AO2 P0000  
T01440133*

*VFR METAR KDVT 082153Z 00000KT 7SM -RA FEW009 BKN065 OVC090 14/13 A2998 RMK AO2 SLP140  
P0002 T01440133*

The destination of KDVT at an elevation approximately 3,200 ft lower than the accident site reported VFR conditions prevailing during the period with light rain with several layers of clouds.

## 2.5 METAR Display

A display of the observation at the approximate time of the accident was obtained from the NWS Aviation Weather Center's METAR display<sup>6</sup> for 1300 MST. The display indicated MVFR conditions in the Flagstaff and Sedona areas, with VFR conditions in the Phoenix area with light rain being reported.

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<sup>6</sup> <https://aviationweather.gov/metar>

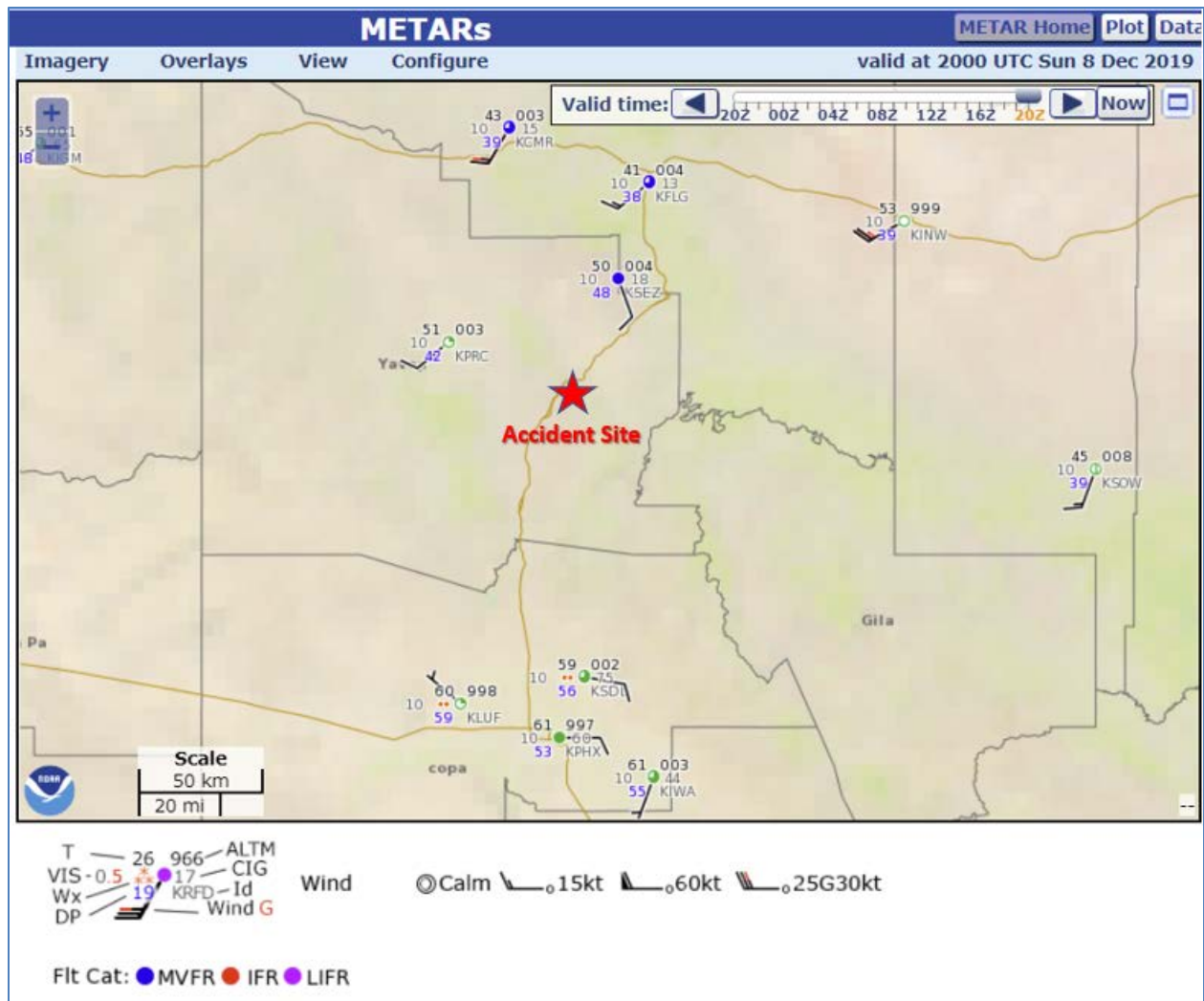


Figure 3 - NWS AWC's METAR display for 1300 MST

### 3.0 Remote Weather Sensors

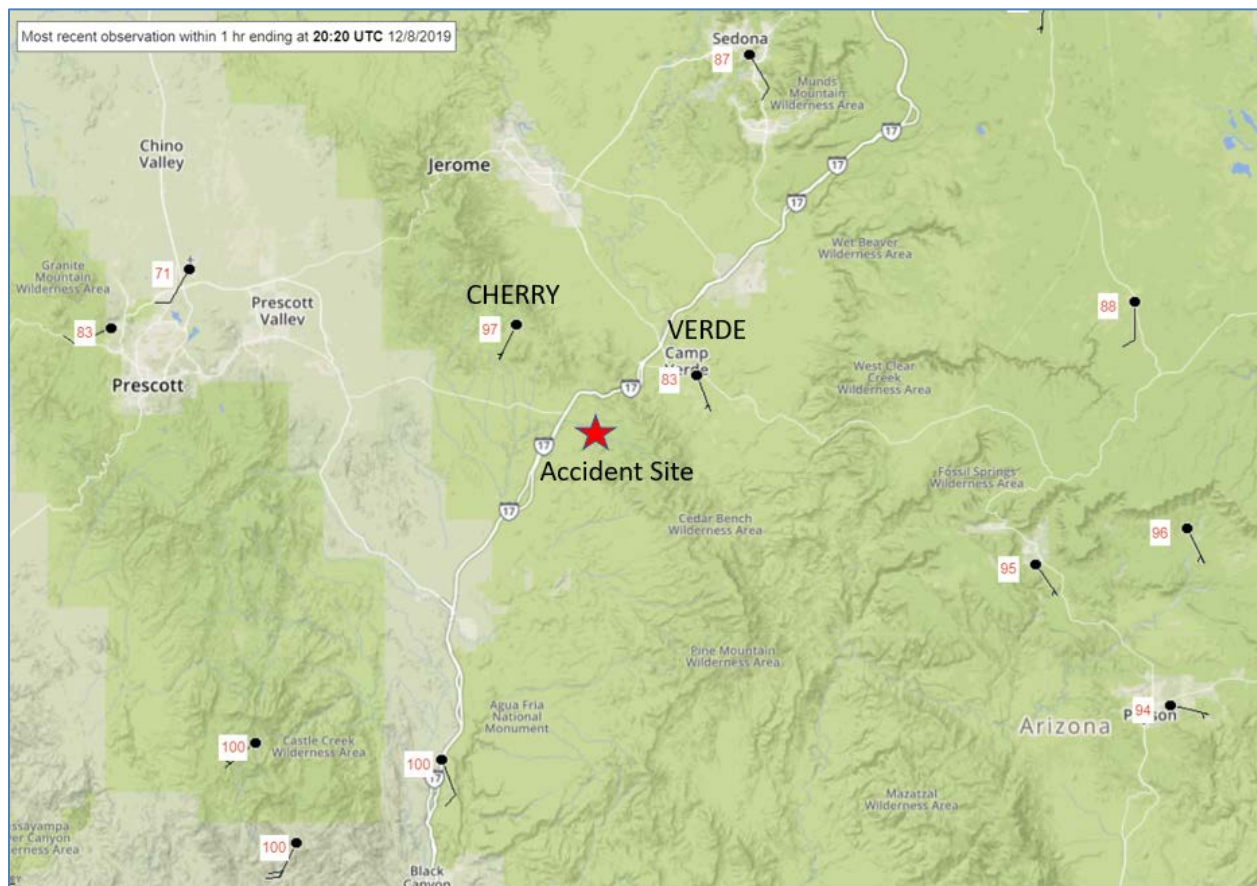
A search of Remote Automated Weather Stations (RAWS) observations from the Bureau of Land Management and the U.S. Forest Service in the area provided several stations in the immediate vicinity of the accident site. While the stations do not report sky cover or visibility, they did report temperature, dew point, relative humidity, and wind information.

VERDE (QVDA3) located at latitude 34.5491° N, longitude -111.8441° W, or 8 ½ miles northeast of the accident site at an elevation of 3,101 ft reported at 1305 MST, a temperature of 56° F, a dew point of 51° F, with the relative humidity of 83%. The wind was from the south-southeast at 5 knots, with a peak gust of 10 knots.

CHERRY (CHEA3) located at latitude 34.5966° N, longitude -112.0477° W, or 8 miles north-northwest of the accident site at an elevation of 5,147 ft reported at 1311 MST, a temperature of

47° F, a dew point of 46° F, and a relative humidity of 97%. The wind was from the south-southwest at 5 knots, with a peak gust of 12 knots.

Figure 4 is a depiction of the RAWS and other ASOS/AWOS stations at 1320 MST with relative humidity in percent shown in the white box to the left of the station and wind direction and speed. Both stations implied the potential for low cloud cover and restrictions to visibility in mist with the temperature-dew point spreads of less than 5° F.



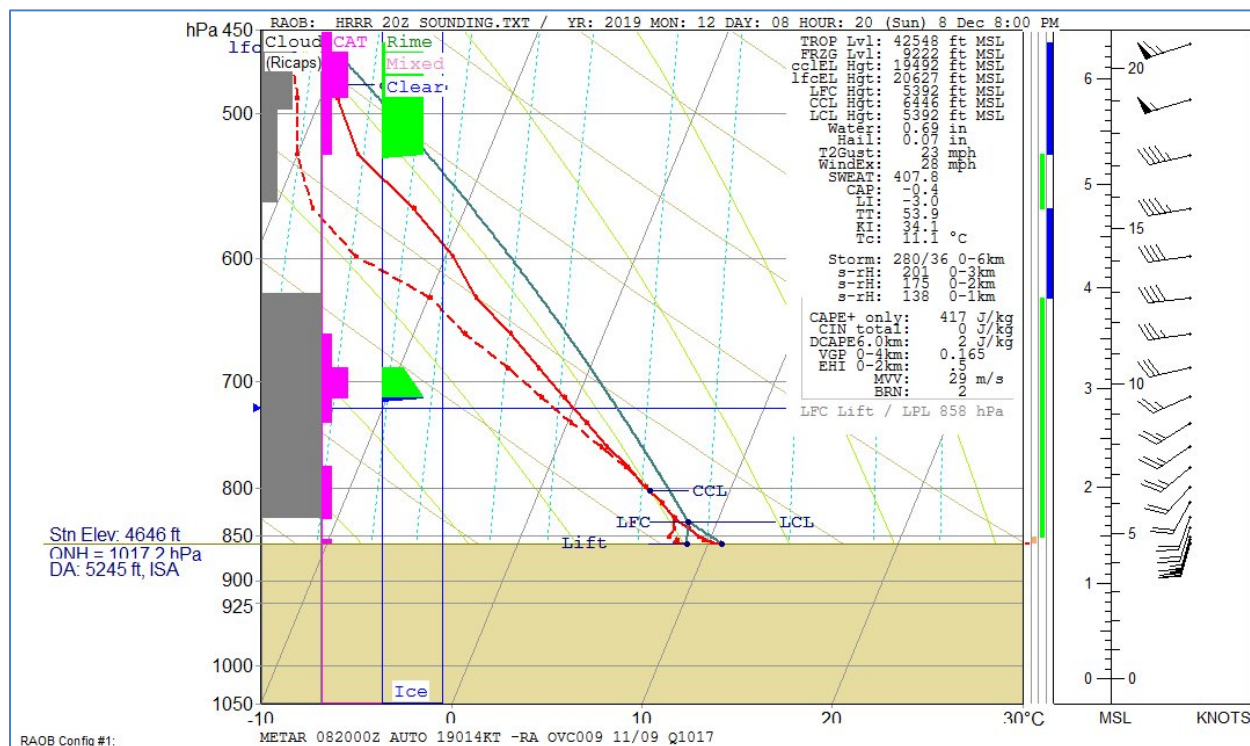
**Figure 4 - RAWS sites in the vicinity of the accident sites at 1320 MST with RH in percent shown**

#### 4.0 Sounding

To determine the vertical structure and state of the atmosphere over the accident site a High-Resolution Rapid Refresh (HRRR)<sup>7</sup> numerical model data was retrieved from the NOAA Air Resources Laboratory for the accident site coordinates and plotted on a standard Skew T log P

<sup>7</sup> The HRRR is a National Oceanic and Atmospheric Administration (NOAA) real-time three-kilometer 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.

diagram<sup>8</sup> using the complete Rawinsonde Observation RAOB program software<sup>9</sup> was created for 1300 MST and is included as figure 5 from the surface to approximately 21,000 ft.



**Figure 5 - HRRR numerical model sounding over the accident site for 1300 MST**

The sounding depicted an elevation of 4,646 ft with a near surface temperature of 10.7° C (51° F), a dew point of 8.9° C (48° F), with a relative humidity of 89%, and a density altitude of 5,245 ft. The lifted condensation level (LCL)<sup>10</sup> and level of free convection (LFC)<sup>11</sup> were at 746 ft agl, with the convective condensation level (CCL)<sup>12</sup> at 1,800 ft agl. The sounding was saturated from the LCL through 10,000 ft with a relative humidity greater than 95%, with cloud tops indicated near 13,000 ft, with another layer of clouds above 16,000 ft. The freezing level was at 4,576 ft agl or 9,222 ft msl and supported structural icing in the clouds above that level. The sounding also indicated a high threat or the potential for severe carburetor type icing below 10,000 ft based on the temperature, dew point, and relative humidity profiles. The atmosphere was characterized as conditionally unstable with a Lifted Index<sup>13</sup> of -3 and a positive Convective Available Potential

<sup>8</sup> Skew T log P diagram – is a standard meteorological plot or thermodynamic diagram 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.

<sup>9</sup> RAOB software – The complete RAWinsonde OBservation program is an interactive sounding analysis program developed by Environmental Research Services, Matamoras, Pennsylvania, for plotting and analyzing upper air data

<sup>10</sup> Lifting Condensation Level (LCL) - the level at which a lifted parcel becomes saturated. The LCL height corresponds to cloud base height for forced ascent.

<sup>11</sup> Level of Free Convection (LFC) - the last level where a parcel becomes buoyant, or "warmer" than the environmental temperature at the same level. The LFC represents the bottom of the layer containing CAPE.

<sup>12</sup> 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.

<sup>13</sup> Lifted Index (LI) - the difference between the lifted parcel temperature at 500 hPa and the 500 hPa temperature in

Energy (CAPE) of 417 Joules per kilogram. The precipitable water content was 0.69 inches and the sounding supported the development of rain showers.

The HRRR wind profile indicated surface wind from 190° at 14 knots with wind veering to the west with increasing wind speeds with height. The wind at 5,500 ft (854 ft agl) was from approximately 193° at 19 knots with a temperature and dew point temperature of 7.7° C, with a relative humidity of 100%. The mean 0 to 6 kilometer or 18,000 ft wind was from 250° at 48 knots.

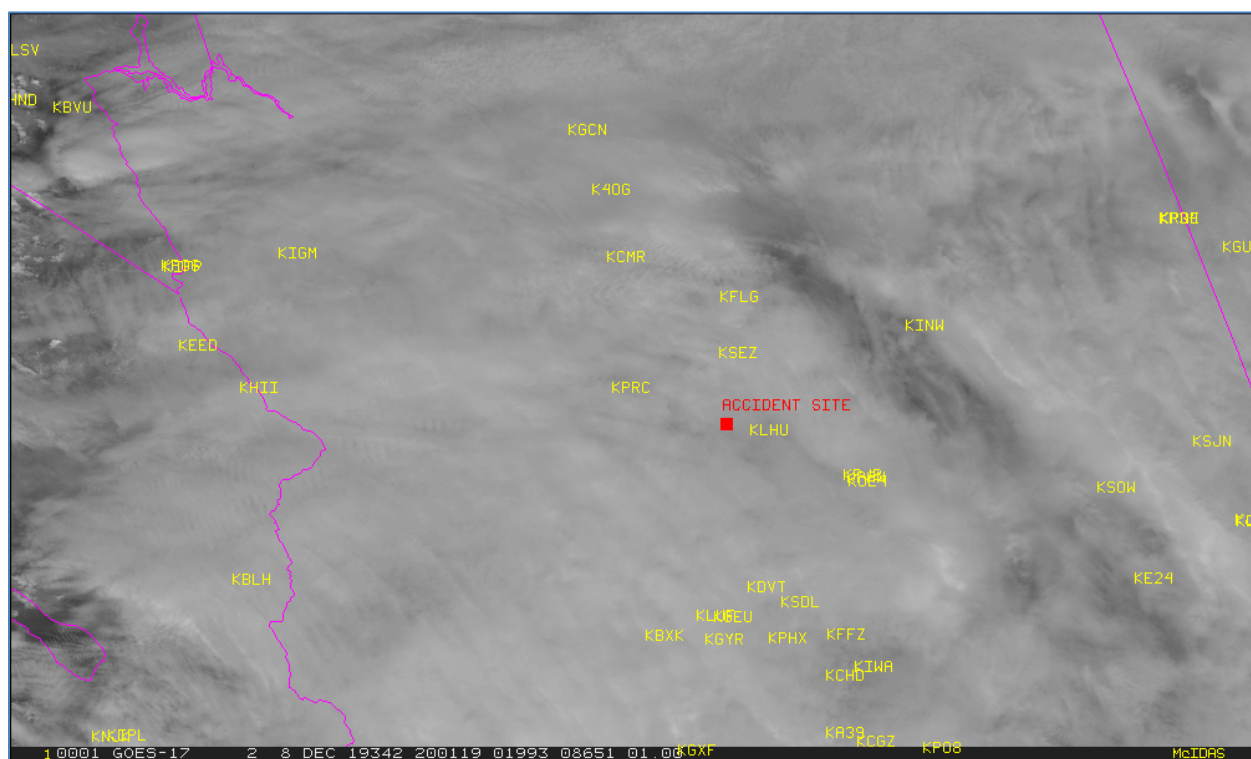
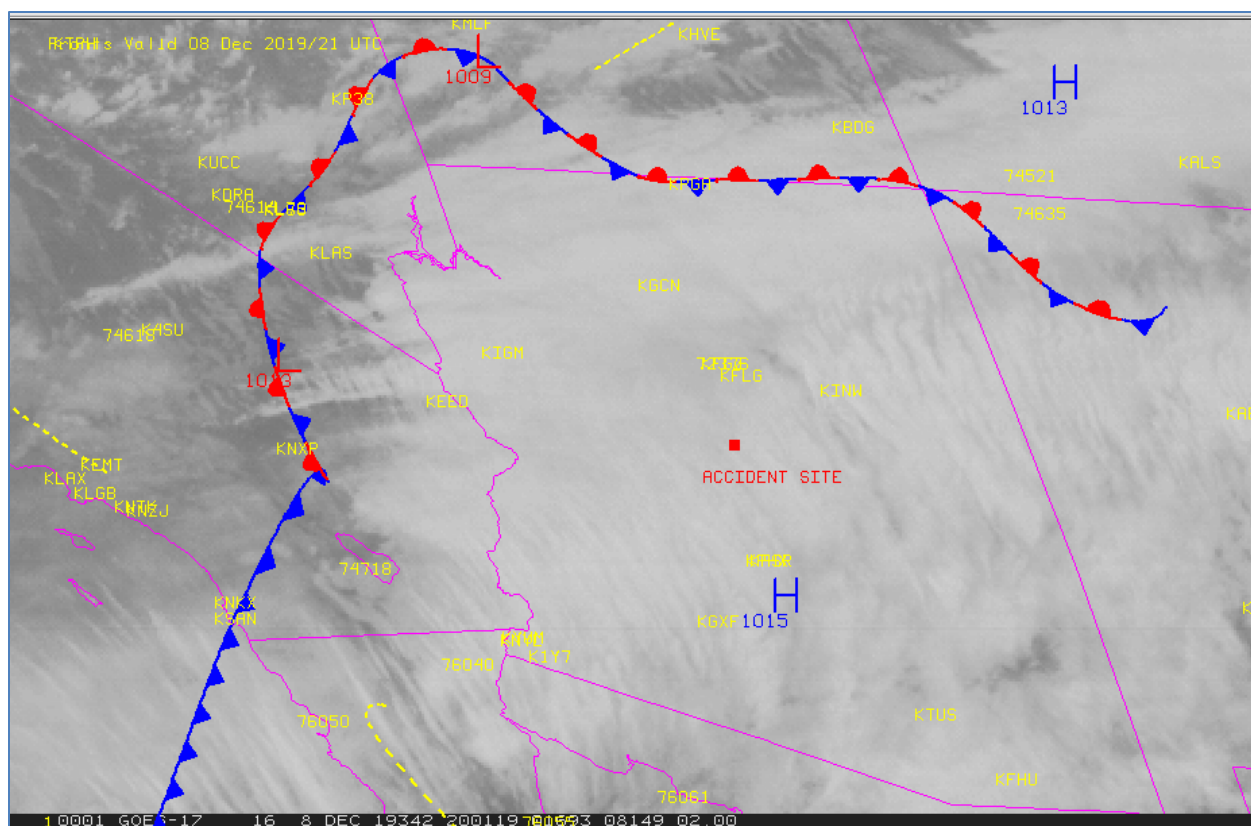
## **5.0 Satellite Imagery**

The Geostationary Operational Environmental Satellite number 17 (GOES-17) data was 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 (McIDAS) software. The infrared long wave and visible imagery were obtained surrounding the time of the accident, with the images closest to the time of the accident documented below. The infrared long wave imagery (band 13) at a wavelength of 10.3 microns ( $\mu\text{m}$ ) provided radiative cloud top temperatures with a nominal spatial resolution of 2 km. The visible (band 2) at a wavelength of 0.64  $\mu\text{m}$  images at a resolution of 0.5 km.

Figure 6 and 7 are the GOES-17 infrared and visible images at 1301 MST, which depicted an extensive area of clouds over Arizona, with overcast sky cover over the accident site.

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the sounding. Negative values denote parcels that are warmer than the background 500 hPa temperatures and are thus buoyant or "unstable".



## 6.0 Pilot Reports

The following pilot reports (PIREPs) below 18,000 ft were reported along the general route of flight. The reports are in standard code and abbreviations, with time in UTC.

*SDL UA /OV SDL360002/TM 1457/FL038/TP C68A/SK OVC038*  
*SDL UA /OV SDL270005/TM 1514/FL034/TP E55P/SK OVC034*  
*SDL UA /OV PXR030017/TM 1611/FL080/TP C172/WX -RA/TB MOD*  
*SDL UA /OV 7NW/TM 1652/FL100/TP G280/RM BASE100*  
*PHX UA /OV PXR180005/TM 1841/FL085/TP B737/TB MODERATE/RM MODERATE TURBULENCE*  
*BETWEEN 085-120*  
*FFZ UA /OV 1NM N/TM 1846/FL024/TP C172/RM BASES REPORTED AT 040*  
*FFZ UA /OV 1.5 NM NW/TM 1851/FL024/TP C172/SK SCT030*  
*SDL UA /OV 5 N/TM 1900/FL058/TP C56X/SK OVC058*  
*PHX UA /OV PHX040035/TM 1916/FL160/TP CL35/TB MODERATE*  
*FFZ UA /OV 5NM E/TM 1917/FL024/TP PA28/RM BASES REPORTED AT 029*  
*FFZ UA /OV 1NM E/TM 1925/FL024/TP C172/SK FEW022*  
*DVT UA /OV DVT270010/TM 2014/FL035/TP UNKN/RM BASE BKN035*  
*PHX UA /OV PXR010015/TM 2029/FL090/TP B737/TA 00/IC LIGHT RIME ICING*

Most of the reports were in the Phoenix area and south near Scottsdale (SDL) and in the Falcon Field (FFZ), Mesa, Arizona areas reporting various bases of the overcast cloud cover during the period. Several reports of moderate turbulence were reported between 8,000 and 12,000 ft, and at 16,000 ft. A single report of light rime type icing conditions was reported at 9,000 ft in the Phoenix area.

## 7.0 NWS Forecasts

### 7.1 Terminal Aerodrome Forecasts

The NWS Flagstaff (KFGZ), Arizona, Weather Forecast Office (WFO) was responsible for the issuance of the Terminal Aerodrome Forecast (TAF) for KSEZ and KPRC. A TAF is a concise statement of the expected meteorological conditions at an airport during a specified period (usually 24 hours). TAFs are valid for a 5 mile radius around an airport's center point. The forecasts issued surrounding the period relevant to the preflight planning and the time of the accident was as follows. The forecasts issued at approximately 0740 MST were as follows and available for the morning briefing:

***TAF AMD KFLG 081426Z 0814/0912 23013G23KT 6SM -SHRA BR SCT010 OVC020***  
***TEMPO 0814/0818 3SM RA BR OVC010***  
*FM090200 24008KT P6SM -SHRA SCT010 OVC018*  
*FM090600 VRB05KT 5SM -SHSN SCT010 OVC015 =*

*TAF AMD KSEZ 081439Z 0815/0912 23007KT 5SM -SHRA BR SCT005 BKN025*  
*TEMPO 0815/0817 2SM BR SCT005 BKN010*  
***FM081700 20010G20KT 6SM -SHRA BR SCT008 BKN020***  
*FM090200 VRB05KT P6SM -SHRA SCT005 OVC010=*

*TAF AMD KPRC 081436Z 0815/0912 VRB06KT P6SM -SHRA SCT019 BKN040 OVC100*  
***FM081700 19010G20KT P6SM SCT020 BKN040***  
*FM090200 20007KT P6SM VCSH SCT025 BKN050=*

*TAF AMD KDVT 081447Z 0815/0912 VRB03KT P6SM SCT012 BKN025  
FM081600 VRB03KT P6SM FEW040 BKN050  
FM082200 24007KT P6SM SCT050 BKN120  
FM090100 VRB04KT P6SM SCT060 BKN200 =*

The TAFs for KFLG and KSEZ both expected MVFR conditions to prevail during the period with light rain and mist with overcast ceilings between 1,000 and 2,000 ft agl. The forecasts for KPRC and KDVT expected general VFR conditions to prevail with ceilings broken between 4,000 ft to 5,000 ft agl.

The next schedule TAFs were issued at 1034 MST and were as follows and current at the time of the accident:

*TAF KFLG 081734Z 0818/0918 23013G23KT 6SM -SHRA BR SCT010 BKN015 OVC020  
FM090200 24008KT P6SM -SHRA SCT010 OVC018  
FM090600 VRB05KT 5SM -SHSN SCT010 OVC015 =*

*TAF KSEZ 081734Z 0818/0918 17010KT 6SM -SHRA BR SCT008 BKN010  
FM082000 18010G20KT P6SM -SHRA FEW008 SCT010 BKN020  
FM090200 VRB05KT P6SM -SHRA SCT005 OVC010=*

*TAF KPRC 081734Z 0818/0918 19010G20KT P6SM -SHRA SCT020 BKN040  
FM090200 20007KT P6SM VCSH SCT025 BKN050=*

*TAF KDVT 081721Z 0818/0918 VRB03KT P6SM FEW030 SCT050 BKN120  
TEMPO 0818/0820 BKN025  
FM082200 23004KT P6SM FEW060 BKN150  
FM090300 VRB04KT P6SM FEW060 BKN200  
FM090900 VRB04KT P6SM SCT030 BKN060 =*

The updated TAFs all expected MVFR to VFR conditions to prevail during the period with light rain and marginal ceilings at KFLG and KSEZ, with VFR conditions in light rain at KPRC and KDVT.

## **7.2 Area Forecast Discussion**

The NWS Area 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 it relates to the creation of the TAF. These are useful for additional aviation-related issues that cannot be encoded into the TAF. The discussion also gives some reasoning behind the forecast. These are generated roughly every 6 hours and corresponds to the release of the latest TAFs for that office. The forecast discussion issued at 0850 MST was as follows.

*FXUS65 KFGZ 081550  
AFDFGZ*

*Area Forecast Discussion  
National Weather Service Flagstaff AZ  
850 AM MST Sun Dec 8 2019*

**.SYNOPSIS...A Pacific weather system will continue to bring rain and mountain snow showers across northern Arizona through Monday.** Some light snow will be possible down to around the 7,000 foot elevation level by Monday morning. Showers decrease Monday afternoon and evening with dry and mild weather returning on Tuesday.

**.DISCUSSION...A saturated airmass continues to stream over northern Arizona this morning generating low clouds, scattered showers, and areas of fog.** Snow levels remain above our population centers at around 8,000-9,000 feet. The weather is expected to remain generally the same through much of the day as a trough approaches the region. Latest model guidance continues to indicate just enough instability, mainly across Coconino County, for a thunderstorm or two this afternoon. We are beginning to see some rises on creeks and streams south of the Mogollon Rim, and this will continue through Monday morning. Significant flooding is not anticipated, but be cautious around the high water.

Colder air will advect into the region from north to south tonight with snow levels falling to between 6,000-7,000 feet by Monday morning. Light snow accumulations will be possible down to 7,000 feet, with heavier snowfall remaining above 8,000 feet.

The current forecast handles all of this well and no updates are needed this morning.

**.PREV DISCUSSION /400 AM MST/...An active period of weather is underway this morning as moisture streams into Arizona ahead of a positively tilted trough moving into the Great Basin.** An area of showers overnight brought anywhere from 0.10" to 0.50" of precipitation, with a few mountain locations nearing 1.00". Radar trends this morning show precipitation is becoming more convective (showery) and will likely remain so through the duration of the event. Upslope areas, especially on southwest facing slopes, will be favored for the highest precipitation with this event. Snow levels during the daytime today will range from 7,500 ft across the Kaibab Plateau (N. Rim) to 9,000 ft in the White Mountains with most areas seeing rain. **In addition, the saturated air mass has lead to fog development with visibility ranging from a few miles to 1/4 mile or less at times. Fog will continue through the morning hours with a few areas seeing it persist through the daytime.**

Showers will continue as the trough moves south over Arizona tonight through early Monday. Additional rainfall and melting snow will lead to rises on creeks and streams flowing south of the Mogollon Rim from later today into Monday. The cold air will move in from north to south tonight through Monday morning lowering snow levels to between 6,000 to 7,000 ft. Up to an inch or two of new snow is possible by Monday morning down to around 7,000 ft.

Higher totals will be observed above 8,000 ft over the San Francisco Peaks, Kaibab Plateau, and White Mountains. Showers continue along and south of the Rim Monday afternoon before tapering off Monday evening.

Drier and warmer weather returns Tuesday and will last through the week, aside from a quick moving disturbance to bring breezy and cloudy conditions on Wednesday.

**.AVIATION...For the 18Z package...Widespread MVFR and areas of IFR from rain, low clouds, and fog to persist across northern Arizona for the next 24 hours as a storm system affects the region. Periods of light rain and showers will continue, with snow levels 8000-9000 ft above sea level through 03Z then gradually falling to 6500-7500 ft by 12Z Monday. Some light snow possible at KFLG-KGCN terminals 06Z-18Z Mon. Aviation discussion not updated for TAF amendments.**

**.FIRE WEATHER...Expect rain and some mountain snow today and Monday.** Ventilation will be limited to marginal or fair for most areas each afternoon due to shallow mixing. Breezy southwest wind today will become northerly by Monday.

Tuesday through Thursday...Dry conditions Tuesday through Thursday. Temperatures returning to seasonable levels. Light winds.

**.FGZ WATCHES/WARNINGS/ADVISORIES...NONE.**

PUBLIC...TPS/MCT  
AVIATION...McCollum  
FIRE WEATHER...JJ

### 7.3 Graphic Forecast for Aviation

The NWS Graphic Forecast for Aviation (GFA) product replaced the Area Forecast and provides a graphical depiction of surface wind, weather, with color coded general flight categories, and cloud cover, with the graphic AIRMET Sierra for IFR conditions, mountain obscuration, and icing conditions overlaid. The GFA is available at the NWS AWC website and through other weather briefing services.

Figure 8 is the GFA Surface Forecast for the southwest issued at 1201 MST and valid for 1400 MST covering the period of the accident. The GFA surface weather depicted light southwesterly winds of 10 knots or less, with light rain to rain showers over the area, with pockets of visibility less than 3 miles.

Figure 9 is the GFA Cloud Cover Forecast chart for the southwest issued at 1202 MST and valid for 1400 MST. The chart depicted broken to overcast clouds near 7,000 ft msl with tops to 31,000 ft. A Graphical AIRMET (G-AIRMET) for mountain obscuration and icing conditions also extended over northern Arizona and the accident site.

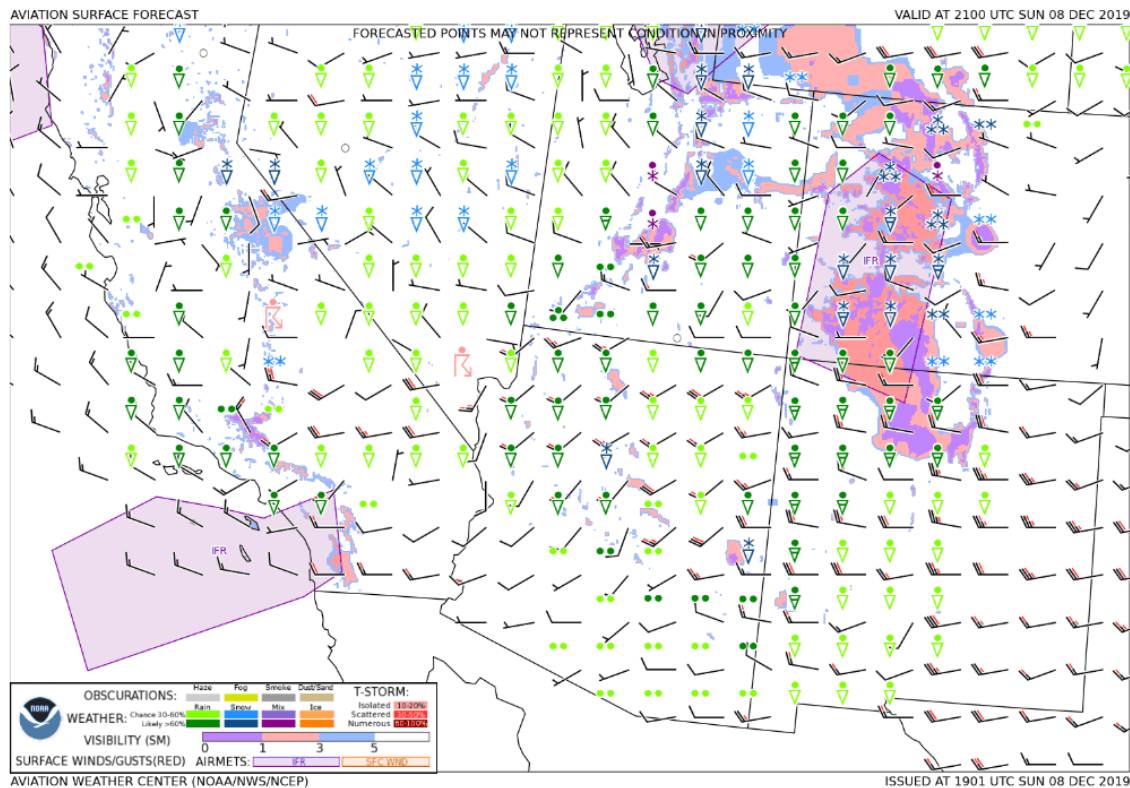


Figure 8 - GFA Surface Forecast issued at 1201 MST and valid for 1400 MST

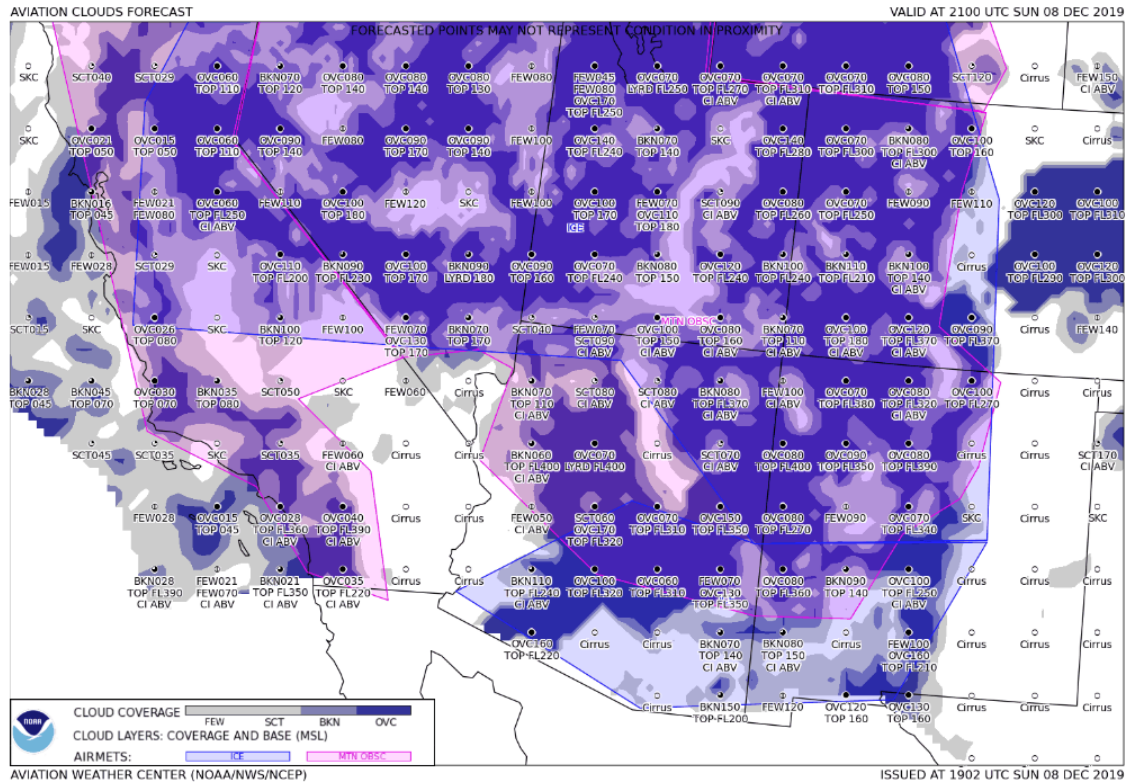


Figure 9 - GFA Cloud Cover Forecast issued at 1202 MST for 1400 MST

## 7.4 Winds and Temperatures Aloft Forecast

The following Winds Aloft Forecast was current for the route of flight, the forecast was valid for 1700 MST and for use between 1300 and 2000 MST.

### WINDS ALOFT FORECASTS

DATA BASED ON 081800Z

VALID 090000Z FOR USE 2000-0300Z. TEMPS NEG ABV 24000

| FT  | 3000 | 6000    | 9000    | 12000   | 18000   | 24000   | 30000  | 34000  | 39000  |
|-----|------|---------|---------|---------|---------|---------|--------|--------|--------|
| PRC |      |         | 2527+00 | 2627-05 | 2656-19 | 2585-27 | 752738 | 753348 | 751858 |
| PHX | 2611 | 2523+08 | 2532+02 | 2641-04 | 2547-18 | 7502-23 | 751436 | 752047 | 762760 |

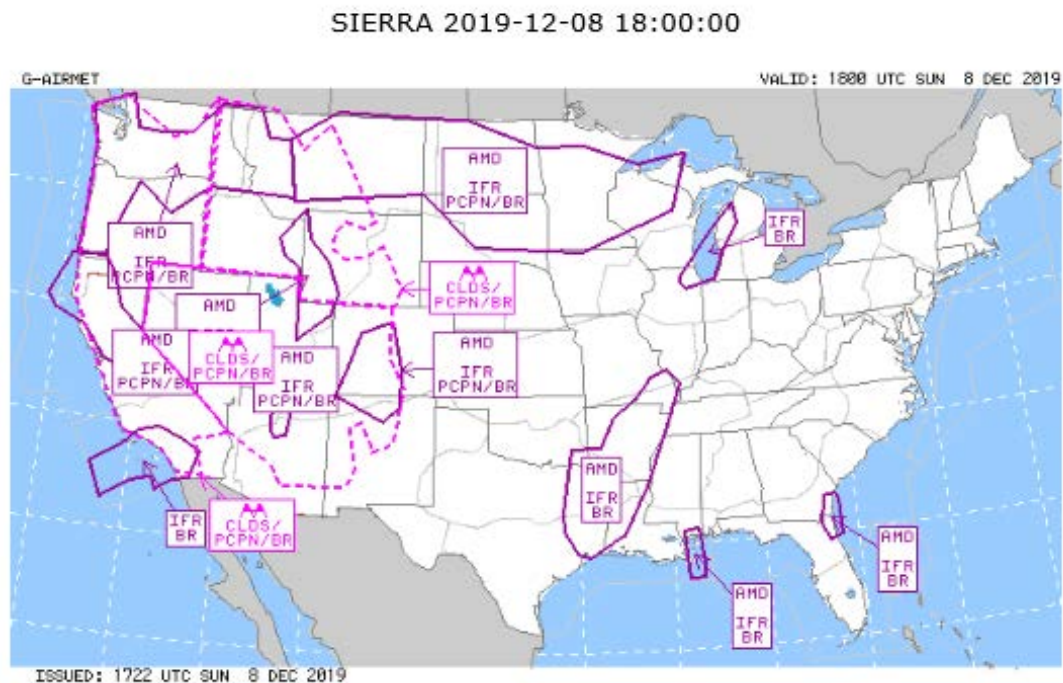
The forecast for Phoenix (PHX) for 3,000 ft expected a wind from 260° at 11 knots, for 6,000 ft a wind from 250° at 23 knots with a temperature of 8° C, and for 9,000 ft a wind from 250° at 32 knots with a temperature of 2° C. The forecast for Prescott (PRC) for 9,000 ft was for wind from 250° at 27 knots with a temperature of 0° C.

## 8.0 NWS Inflight Weather Advisories

Inflight Aviation Weather Advisories are forecasts to advise en route aircraft of development of potentially hazardous weather. Inflight aviation weather advisories in the conterminous U.S. are

issued by the NWS AWC, as well as from the Center Weather Service Units (CWSU) associated with FAA ARTCCs. There are four basic types of inflight aviation weather advisories: the Significant Meteorological Information (SIGMET), the Convective SIGMET, the AIRMET, and the Center Weather Advisory (CWA). Inflight advisories serve to notify en route pilots of the possibility of encountering hazardous flying conditions which may not have been forecast at the time of the preflight briefing. Whether or not the condition described is potentially hazardous to a particular flight is for the pilot to evaluate on the basis of experience and the operational limits of the aircraft. The following AIRMET advisories were current during the period. Figure 10 is the G-AIRMET Sierra for IFR and mountain obscuration conditions and figure 11 the G-AIRMET Zulu for icing conditions valid for the period.

WAUS45 KPCI 081722 AAA  
 WA55  
 SLCS WA 081722 AMD  
 AIRMET SIERRA UPDT 4 FOR IFR AND MTN OBSCN VALID UNTIL 082100  
 .  
 AIRMET IFR...UT AZ...UPDT  
 FROM 50S HVE TO 40SSW INW TO 20WNW DRK TO 40ENE PGS TO 50WSW BCE  
 TO 30SE BCE TO 50S HVE  
 CIG BLW 010/VIS BLW 3SM PCPN/BR. CONDS ENDG 18-21Z.  
 .  
 AIRMET MTN OBSCN...WY NV UT CO AZ NM  
 FROM 30SE LKV TO 50SE REO TO 50SW BPI TO 40SSE LAR TO 60E HBU TO  
 40ESE ALS TO 60NNW CME TO 60SSE ABQ TO 20NW DMN TO 50WNW TUS TO  
 PHX TO EED TO 40SSW FMG TO 30SE LKV  
 MTNS OBSC BY CLDS/PCPN/BR. CONDS CONTG BYD 21Z THRU 03Z.



**Figure 10 - G-AIRMET Sierra for IFR and mountain obscuration conditions valid for 1100 MST**

ZULU 2019-12-08 18:00:00



Figure 11 - G-AIRMET Zulu for occasional moderate icing conditions

Center Weather Advisory number 101 was also current for an area near the destination for an area of moderate to isolated severe icing conditions between 11,000 ft and 24,000 ft, which was reported by aircraft.

FAUS21 KZAB 081754  
ZAB1 CWA 081753  
ZAB CWA 101 VALID UNTIL 081953  
FROM 60NE BZA-5ESE PHX-45S PHX-45E BZA-60NE BZA  
AREA OCNL MOD ISOL SEV ICE. 110-FL240. RPRTD BY ACFT.

## 9.0 Preflight Weather Briefing

The pilot contacted the FAA Prescott Automated Flight Service Station (AFSS) provider Leidos at approximately 0848 MST and requested an outlook briefing and then called again at 1207 MST and requested a standard weather briefing for the route between Flagstaff and Phoenix. There were no other contacts after that time, or any flight plans filed by the accident pilot.

During the first request at 0848 MST the pilot of N5557Q requested 6-hour outlook briefing. The AFSS briefer recognized that the pilot had called in about 15 minutes prior for a briefing and asked if he didn't understand part of the previous briefing and advised the forecasts had not changed. The pilot of N5557Q advised he wanted a 6-hour outlook briefing and the AFSS briefer advised that a series of AIRMETs were current for the route of flight, specifically AIRMET Sierra for mountain obscuration with terrain obscured by clouds and precipitation and mist, AIRMET Tango for turbulence, and AIRMET Zulu for icing conditions. The AFSS briefer asked if that's

all he needed at that time and advised to call again later about 60 to 90 minutes prior to his departure for an updated briefing on the current conditions and status of the AIRMETs.

The pilot of N5557Q called AFSS again at 1207 MST for a standard briefing with an estimated departure at 1230 MST. The estimated time enroute was 30 minutes and direct south under VFR conditions at a planned altitude of 8,000 ft. The Leidos briefer provided the adverse conditions and indicated that an AIRMET<sup>14</sup> for moderate icing above 7,000 ft was current and a Center Weather Advisory was also current approximately 20 miles south of the planned destination for icing, and in addition an AIRMET for mountain obscuration was current over the entire route with AIRMET for IFR conditions over northern Arizona. The briefer further provided the current conditions for Flagstaff and Sedona and indicated MVFR conditions were reported over the route with scattered rain showers. The pilot of N5557Q indicated his desire to depart at 1230 MST and acknowledged that it was currently raining at his location. The pilot then indicated he had what he needed, and the call terminated. The briefer then indicated to call back for an update as needed.

The wav files for the briefings are included as attachment 1 and 2 respectively.

## **10.0 Witness Statements and Photographs**

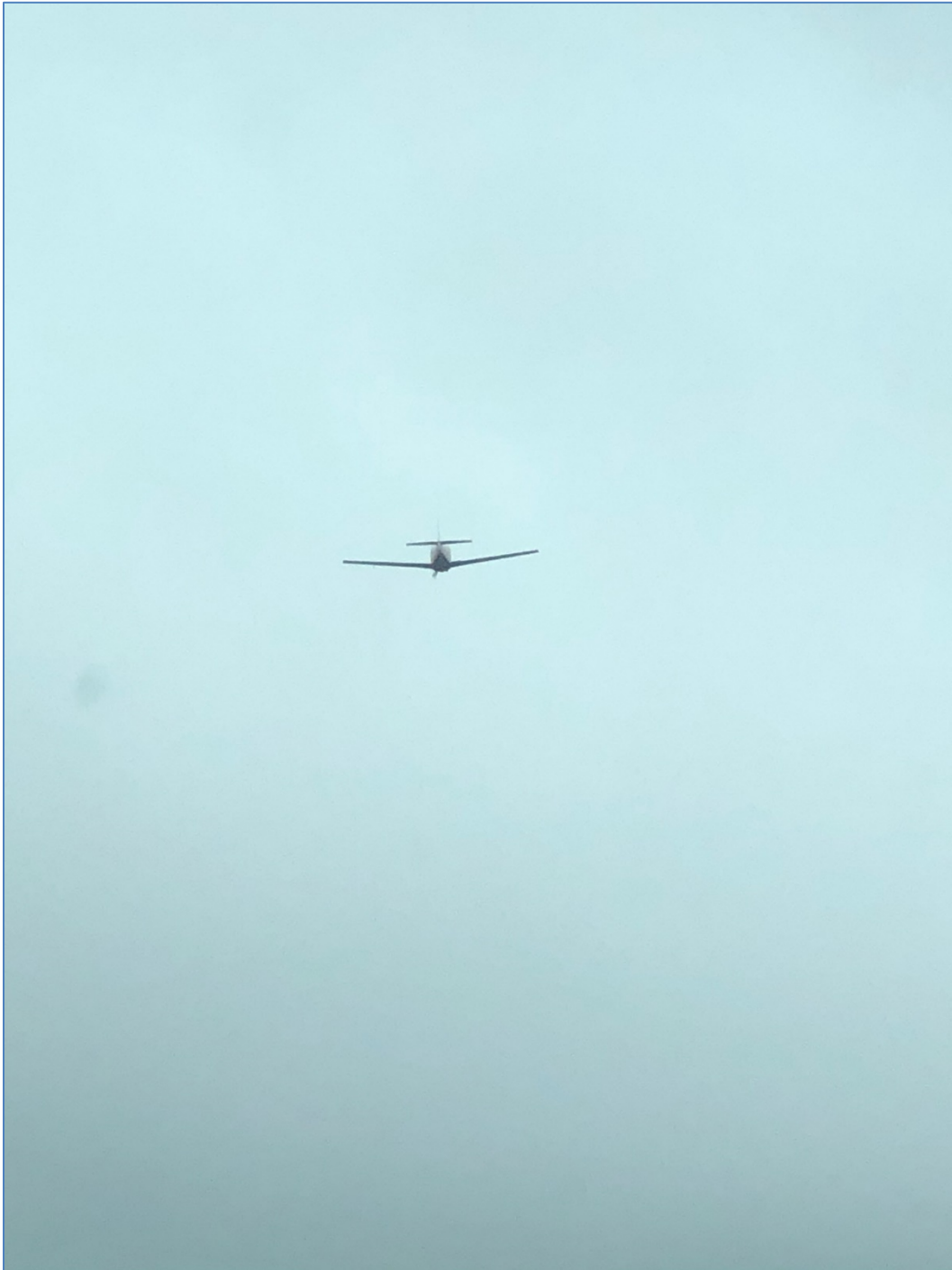
A witness provided comments and photographed the aircraft as they travelled southbound on Interstate highway 17 in the vicinity of Munds Park and reported their observation with the NTSB. The witness stated that they believed they saw the aircraft as the witness was driving to Phoenix Sunday around noon time. They described an orange and white single engine, low wing airplane “scud running” about 300 ft agl following the freeway southbound. The witness reported that the weather conditions at that time consisted of a low ceiling but with good visibility below the clouds. About 20-minutes later they passed the location the accident airplane was eventually found, and indicated that conditions were near zero-zero, with the visibility less than ¼ mile and the clouds were right on the ground. The witness provided 3 pictures that they had taken of the airplane from their car and are included as figures 12-14. The pictures showed the airplane traveling southbound in the same direction as the car close to the ground. The witness said they watched the airplane and it appeared to be following the road. The pictures also showed low clouds with obscuration of mountain peaks in the background of the image.

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<sup>14</sup> AIRMET Sierra update 4 and AIRMET Zulu update 3.



**Figure 12 - Witness photograph of low flying airplane**



**Figure 13 - Witness photograph of low flying aircraft**



**Figure 13 - Witness photograph of low flying aircraft and higher terrain obscured by clouds**

**F. ATTACHMENTS**

Attachment 1 – FAA Automated Flight Service Station (AFSS) 0848 MST outlook briefing audio

Attachment 2 - FAA Automated Flight Service Station (AFSS) 1207 MST standard briefing audio

Submitted by:

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Don Eick  
Senior Meteorologist