



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

January 24, 2022

Specialist's Factual Report

METEOROLOGY

WPR22FA054

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A. ACCIDENT

Location: Visalia, California
Date: December 4, 2021
Time: 1840 Pacific standard time (0240 UTC on December 5, 2021)¹
Aircraft: Type – Beech V35; Registration – N7933M

B. METEOROLOGIST

Mike Richards
Senior Meteorologist
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C. DETAILS OF THE INVESTIGATION

The National Transportation Safety Board’s meteorological specialist did not travel in support of this accident investigation and gathered all weather data remotely. Unless otherwise noted, all times are in Pacific standard time (PST) for December 4, 2021 (based upon the 24-hour clock), directions are referenced to true north, distances are in nautical miles and heights are above mean sea level (msl). The accident site was located at about: 36.3198° north latitude; 119.40696° west longitude at an elevation of about 300 feet.

This report provides information on the weather and relevant forecasts applicable to the accident location at the accident time.

D. WEATHER INFORMATION

1.0 Surface Observations

An Automated Weather Observing System (AWOS) was located at Visalia Municipal Airport (VIS²), in Visalia, California, which was located within one mile of the accident location at an elevation of about 300 feet and had a magnetic variation of about 12.5° east. VIS was the departure airport for the accident flight. Automated longline³ reports from the VIS AWOS during the times surrounding the accident time are presented here.

¹ UTC – abbreviation for Coordinated Universal Time

² This report uses the 3-digit International Air Transport Association format for airport identification, which does not use the geographic designating digit (e.g., “K” for stations in the continental U.S. and “P” for U.S. stations in Alaska and the Pacific region) as found in the 4-digit International Civil Aviation Organization (ICAO) identifier format. Weather observations from airports in this report are referenced by their reporting station’s identifier (using ICAO format that includes the geographic designating digit), not by the airport at which the reporting station is located.

³ “Longline” refers to the dissemination of weather observations with the intent that they are available in near-real time to national databases (effectively, the whole world) and accessible to the general global public from a large number of vendors. This does not include public accessibility to observations from a reporting station’s Very High Frequency (VHF; line-of-site) or telephone broadcast, where applicable. Longline-dissemination of weather

[1756 PST] METAR KVIS 050156Z AUTO 27004KT 4SM BR CLR 09/09 A3023 RMK AO2 SLP246 T00890089=

[1823 PST] SPECI KVIS 050223Z AUTO 28005KT 3SM BR SCT003 08/08 A3024 RMK AO2=

[1830 PST] SPECI KVIS 050230Z AUTO 28005KT 2 1/2SM BR BKN003 08/08 A3024 RMK AO2=

[1847 PST] SPECI KVIS 050247Z AUTO 30006KT 1 1/4SM BR OVC003 09/09 A3025 RMK AO2=

[1856 PST] METAR KVIS 050256Z AUTO 29004KT 1 1/4SM -RA BR OVC003 09/09 A3025 RMK AO2 RAB48 SLP255 P0000 60000 T00890089 53018=

1956 PST] METAR KVIS 050356Z AUTO 32004KT 1 1/4SM BR OVC003 09/09 A3027 RMK AO2 RAE12 SLP259 P0000 T00940094=

At 1830 PST, the VIS AWOS reported a wind from 280° at 5 knots, visibility of 2 and one-half statute miles, mist, ceiling broken at 300 feet above ground level (agl), temperature of 8° Celsius (C) and dew point temperature of 8°C, altimeter setting of 30.24 inches of mercury; Remarks: automated station with a precipitation discriminator.

At 1847 PST, the VIS AWOS reported a wind from 300° at 6 knots, visibility of 1 and one-quarter statute miles, mist, ceiling overcast at 300 feet agl, temperature of 9°C and dew point temperature of 9°C, altimeter setting of 30.25 inches of mercury; Remarks: automated station with a precipitation discriminator.

2.0 Pilot Reports

There were no publicly longline-disseminated pilot reports⁴ (PIREPs) made within 2 hours and 50 miles of the accident time and location, respectively.

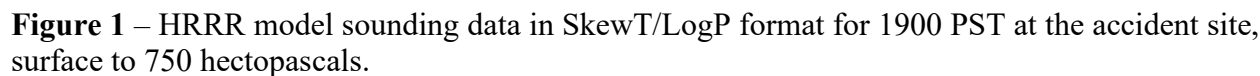
3.0 Weather Radar

A review of weather radar imagery did not identify any pertinent areas of reflectivity near the accident location at the accident time.

observations is the primary vehicle through which the general global public has access to surface weather observations, particularly outside of the aviation community.

⁴ This does not consider pilot reports only broadcast via radio.

A High-Resolution Rapid Refresh (HRRR) model⁵ sounding (figure 1) for the accident site at 1900 PST using an elevation of 285 feet was retrieved from the National Oceanic and Atmospheric Administration's Air Resources Laboratory and analyzed by the RAwinsonde OBservation Program (RAOB). Cloudy conditions were identified by RAOB from about 500 to 2,000 feet, with wet fog identified below 366 feet. The freezing level was noted at about 13,400 feet. The wind below 1,000 feet was westerly at magnitudes below 10 knots.



⁵ The HRRR is a 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.

5.0 Satellite Imagery

Geostationary Operational Environmental Satellite (GOES)-17 satellite data were obtained from an archive at the Space Science Engineering Center at the University of Wisconsin-Madison. Figure 2 presents the GOES-17 infrared cloud-top temperatures over the accident site, which were 8°C. Figure 3 presents a red-green-blue (12.3μm-10.3μm – 10.3μm-3.9μm – 10.3μm; RGB) nighttime microphysics GOES-17 band combination product for 1841 PST. This product assists in visually identifying cloud level and type at night. Figure 4 presents a guide on interpreting these types of images.

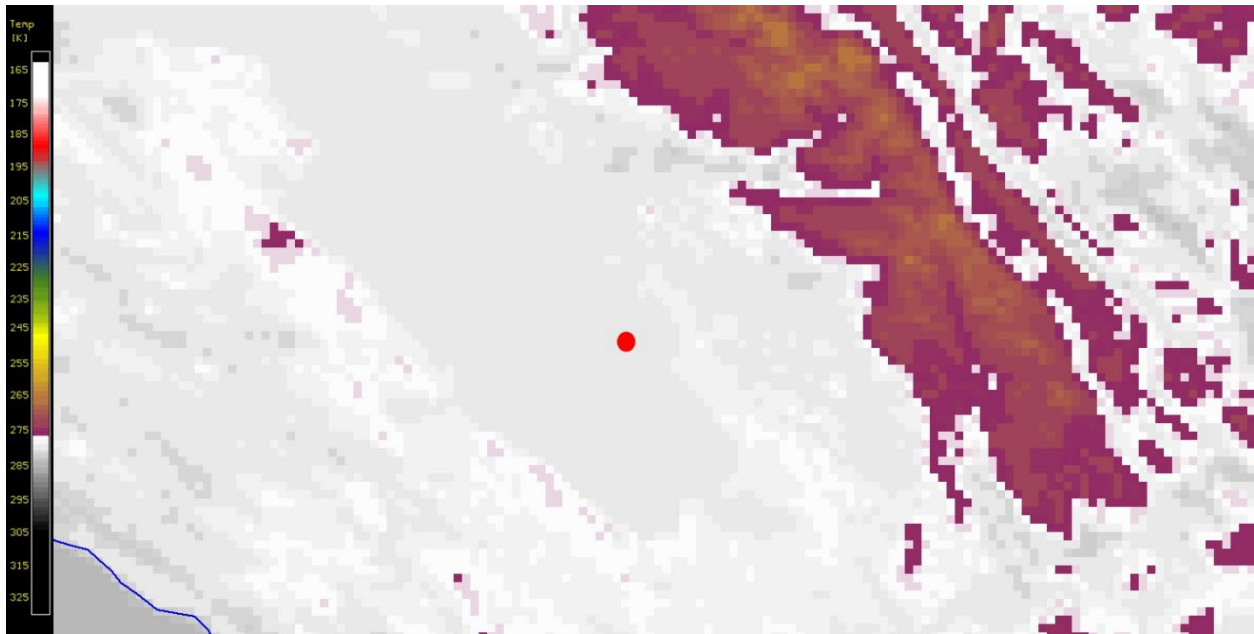


Figure 2 – GOES-17 infrared imagery from 1841 PST. Accident location denoted by the red circle. Image is not corrected for parallax error.

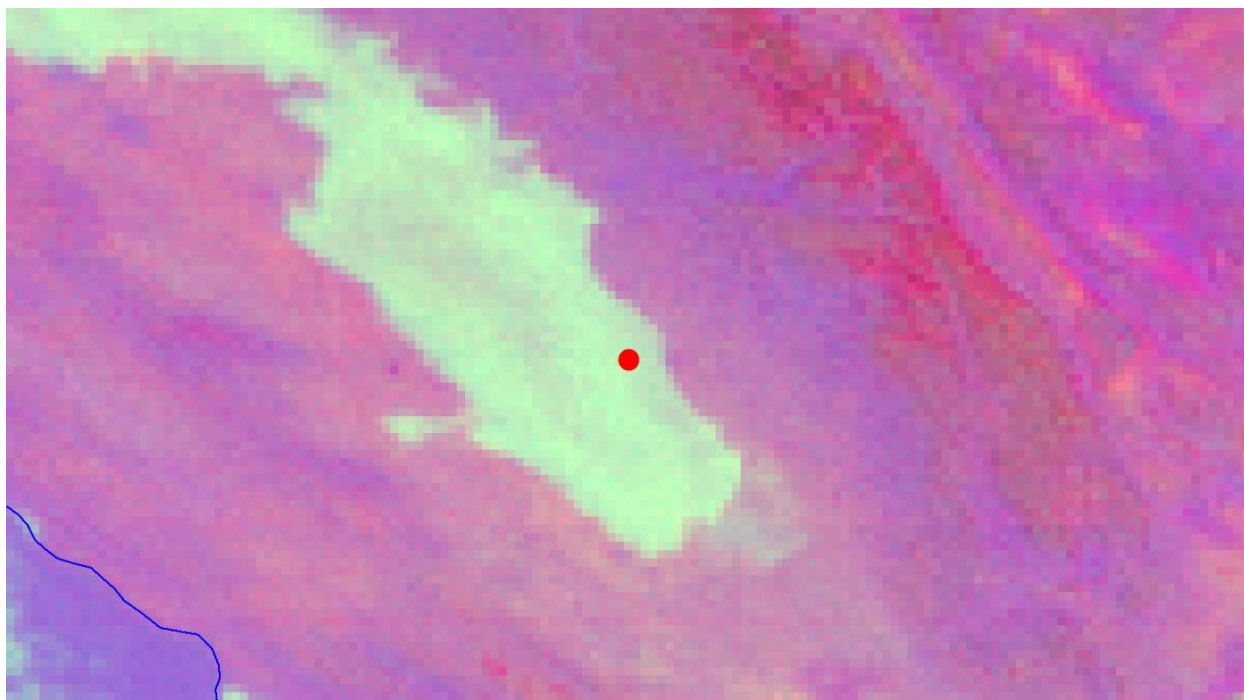


Figure 3 – GOES-17 RGB nighttime microphysics image for 1841 PST. Accident location denoted by the red circle. This image has not been corrected for any parallax error.

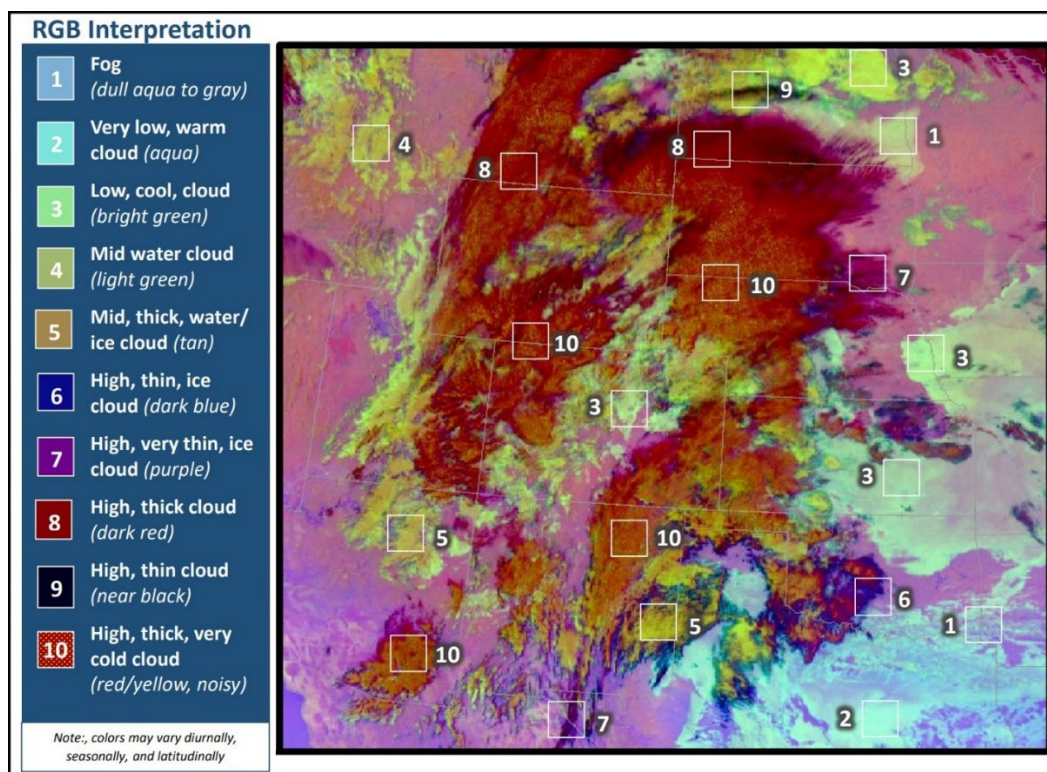


Figure 4 – Interpretation aid for the GOES-17 RGB nighttime microphysics image found in Figure 3. Taken from:

https://www.star.nesdis.noaa.gov/GOES/documents/QuickGuide_GOESR_NtMicroRGB_final.pdf

6.0 Terminal Aerodrome Forecasts

At 1520 PST, a National Weather Service (NWS) Terminal Aerodrome Forecast (TAF) was issued for VIS that forecasted for the accident time: a wind from 320° at 5 knots, visibility of 4 statute miles, haze, sky clear. This was the last TAF issued for VIS prior to the accident time.

*TAF KVIS 042320Z 0500/0524 32005KT 4SM HZ SKC
FM050500 VRB03KT 2SM BR SKC
FM050900 VRB03KT 1/4SM FG VV002
FM051900 17003KT 1SM BR BKN003
FM052000 20002KT 4SM HZ BR SCT250=*

7.0 Area Forecast Discussion

The NWS Weather Forecast Office (WFO) in Hanford, California, issued the following “Aviation” section of an Area Forecast Discussion at 1555 PST. This was the last AFD issued from this WFO prior to the accident.

*FXUS66 KHNX 042355 AAA
AFDHXX
Area Forecast Discussion...UPDATED
National Weather Service Hanford CA
355 PM PST Sat Dec 4 2021*

.AVIATION...

Areas of MVFR visibilities will prevail over the San Joaquin Valley through 05z in haze. LIFR conditions are possible in the San Joaquin Valley once again tonight due to dense fog.

8.0 AIRMETs

An Airmen’s Meteorological Information (AIRMET) SIERRA advisory for instrument flight rule (IFR) conditions, identifying ceilings below 1,000 feet, visibility below 3 statute miles, mist and fog, was issued at 1245 PST and was valid for the accident site at the accident time.

*WAUS46 KKCI 042045
WA6S
-SFOS WA 042045
AIRMET SIERRA UPDT 5 FOR IFR AND MTN OBSCN VALID UNTIL 050300
AIRMET IFR...CA
FROM 20ENE RBL TO 30NNE MOD TO 50ESE CZQ TO 40SSE EHF TO 30SW MOD
TO 50E ENI TO 20ENE RBL
CIG BLW 010/VIS BLW 3SM BR/FG. CONDS ENDG 21-00Z.*

9.0 SIGMETs

There were no convective or non-convective Significant Meteorological Information (SIGMET) advisories active for the accident location at the accident time.

10.0 CWSU Products

There were no Center Weather Advisories or Meteorological Impact Statements issued by the NWS Center Weather Service Units at the Oakland and Los Angeles Air Route Traffic Control Centers that were active for the accident location at the accident time.

11.0 Astronomical

According to the Federal Aviation Administration⁶, on the accident day, sunset occurred at 1642 PST and civil twilight ended at 1710 PST. According to mooncalc.org⁷, the moon had set at 1812 PST, and at the time of the accident and relative to the accident location, the moon was below the horizon.

Submitted by:

Mike Richards
Senior Meteorologist

⁶ https://avcams.faa.gov/sunrise_sunset.php

⁷ <https://www.mooncalc.org/>