



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

July 12, 2021

Specialist's Factual Report

METEOROLOGY

WPR21LA104

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A. ACCIDENT

Location: Riverside, California
Date: February 4, 2021
Time: 1245 Pacific standard time
2045 Coordinated Universal Time (UTC)
Airplane: Cessna 150; Registration: N8107S

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 and also from the National Centers for Environmental Information (NCEI). This specialist factual contains the meteorological factors pertinent to the weather surrounding the accident time. All times are Pacific standard time (PST) based upon the 24-hour clock, where local time is -8 hours from UTC, and UTC=Z. 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. NWS 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.

The accident site was located at latitude 33.9888° N, Longitude 117.4098° W, with an approximate elevation of 755 feet (ft).

D. 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 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 “Aviation Weather Services”, AC 00-45H.¹

1.1 Surface Analysis Chart

The NWS Surface Analysis Chart centered over the southwestern United States for 1300 PST is provided as figure 1 with the approximate location of the accident site within the red circle. The chart depicted a high-pressure center located over western Nevada with a pressure of 1029-hectopascals (hPa). A trough² stretched northwestward from the Baja of Mexico along the California Pacific Coast up to Oregon. The accident site was located east of the surface trough.

The station models around the accident site depicted air temperatures in the mid 60’s degrees Fahrenheit (°F), dew point temperatures in the 20’s to 40’s °F with temperature-dew point spreads of 20°F or more, variable winds at 10 knots, and clear skies.

¹

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

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

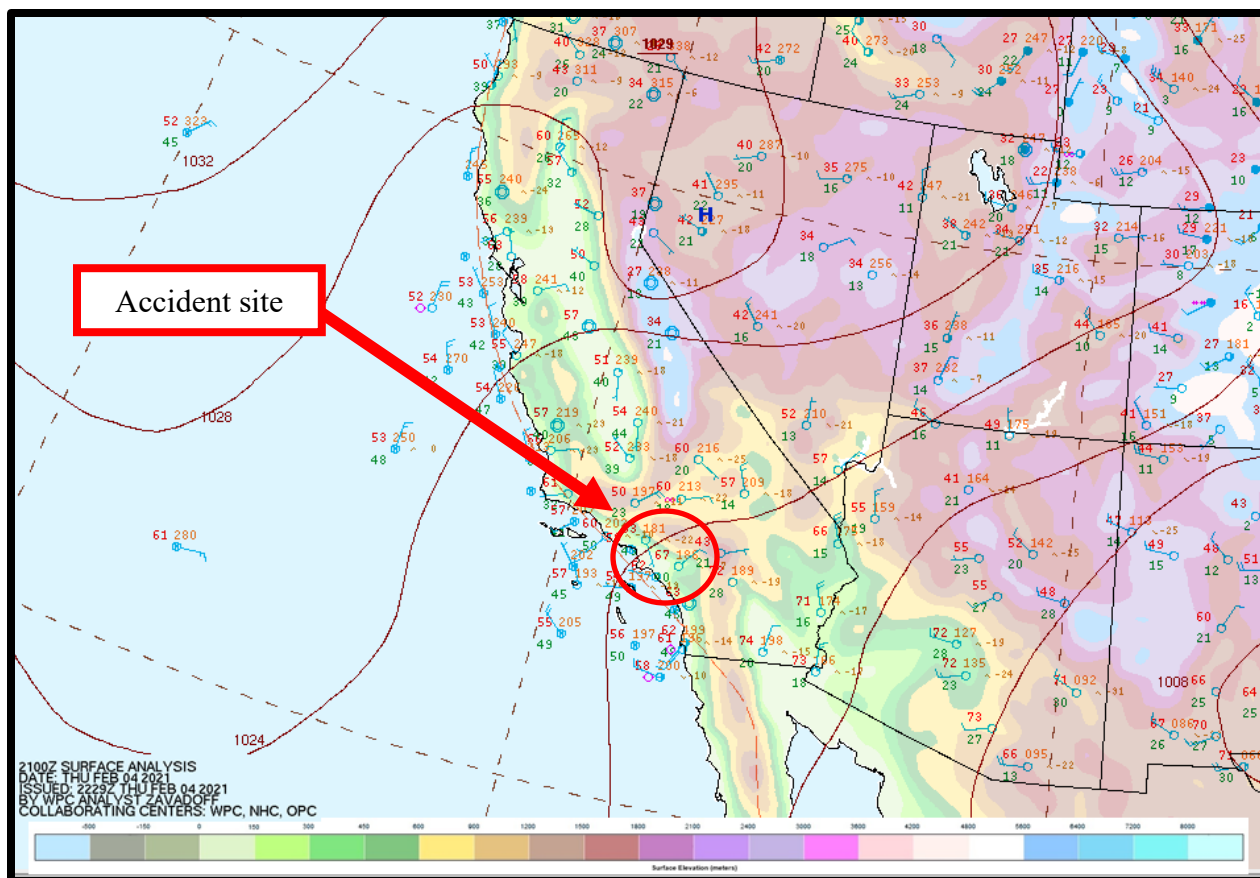


Figure 1 – NWS Surface Analysis Chart for 1300 PST.

1.2 Upper Air Charts

The NWS Storm Prediction Center (SPC) Constant Pressure Charts for 1600 PST at 925-, 850- and 700-hectopascals (hPa) are presented in figures 2 through 4. An inverted³ low-level trough was located above the accident site at 925- and 850-hPa (figures 2 and 3). Troughs can act as lifting mechanisms to help produce clouds and precipitation if sufficient moisture is present. There was an east to northeast wind at 5 to 10 knots at 925- and 850-hPa with the wind becoming northwesterly at 30 knots by 700-hPa.

³ Inverted trough- This is a trough which bulges to the north. Mid-latitude troughs have a north to south amplitude but in the tropics the opposite is the case. Inverted troughs look like ridges but there is lower pressure at their centers of curvature. Inverted troughs can occur across areas of the tropics and sub-tropics.
https://www.weather.gov/otx/Full_Weather_Glossary#

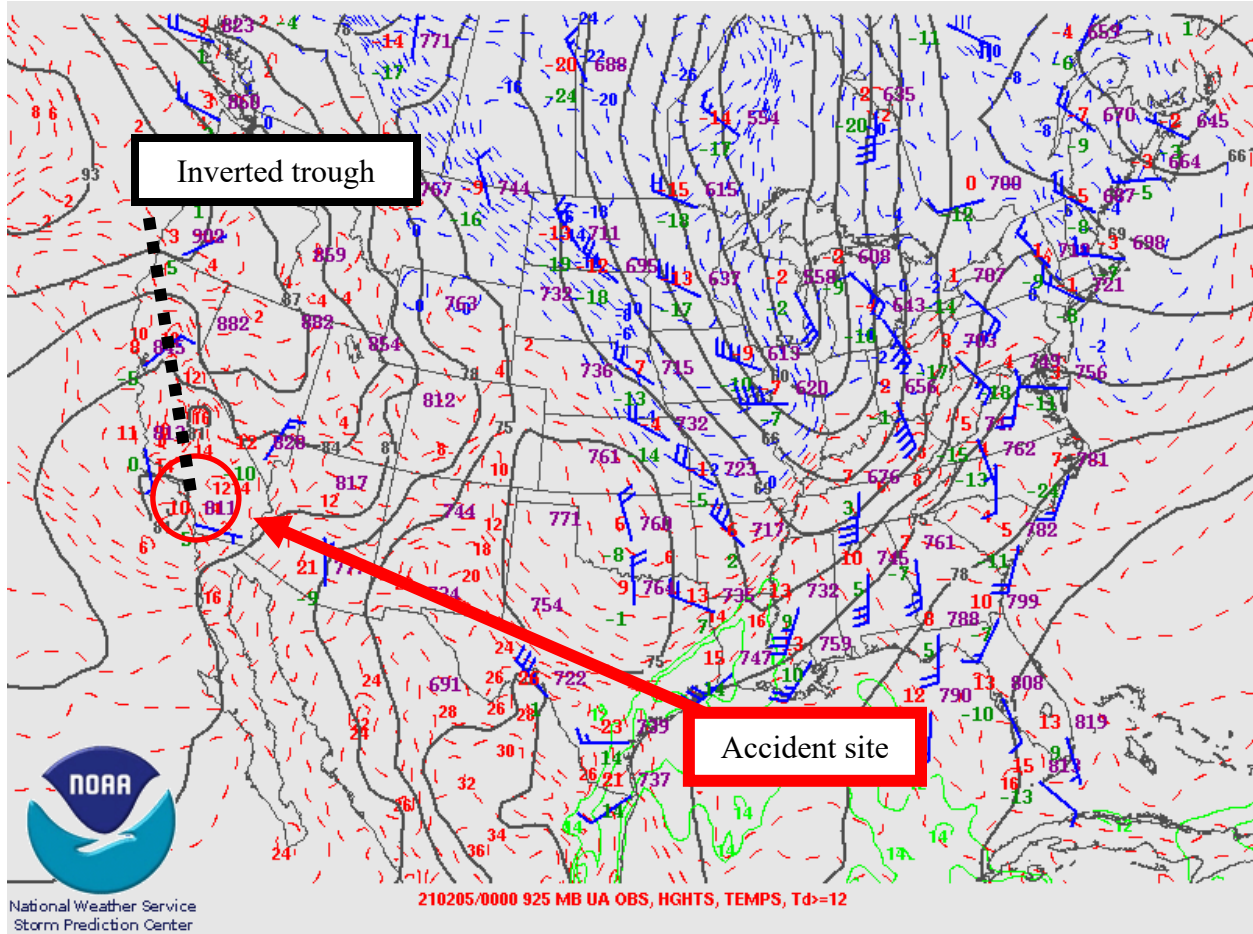


Figure 2 – 925-hPa Constant Pressure Chart for 1600 PST.

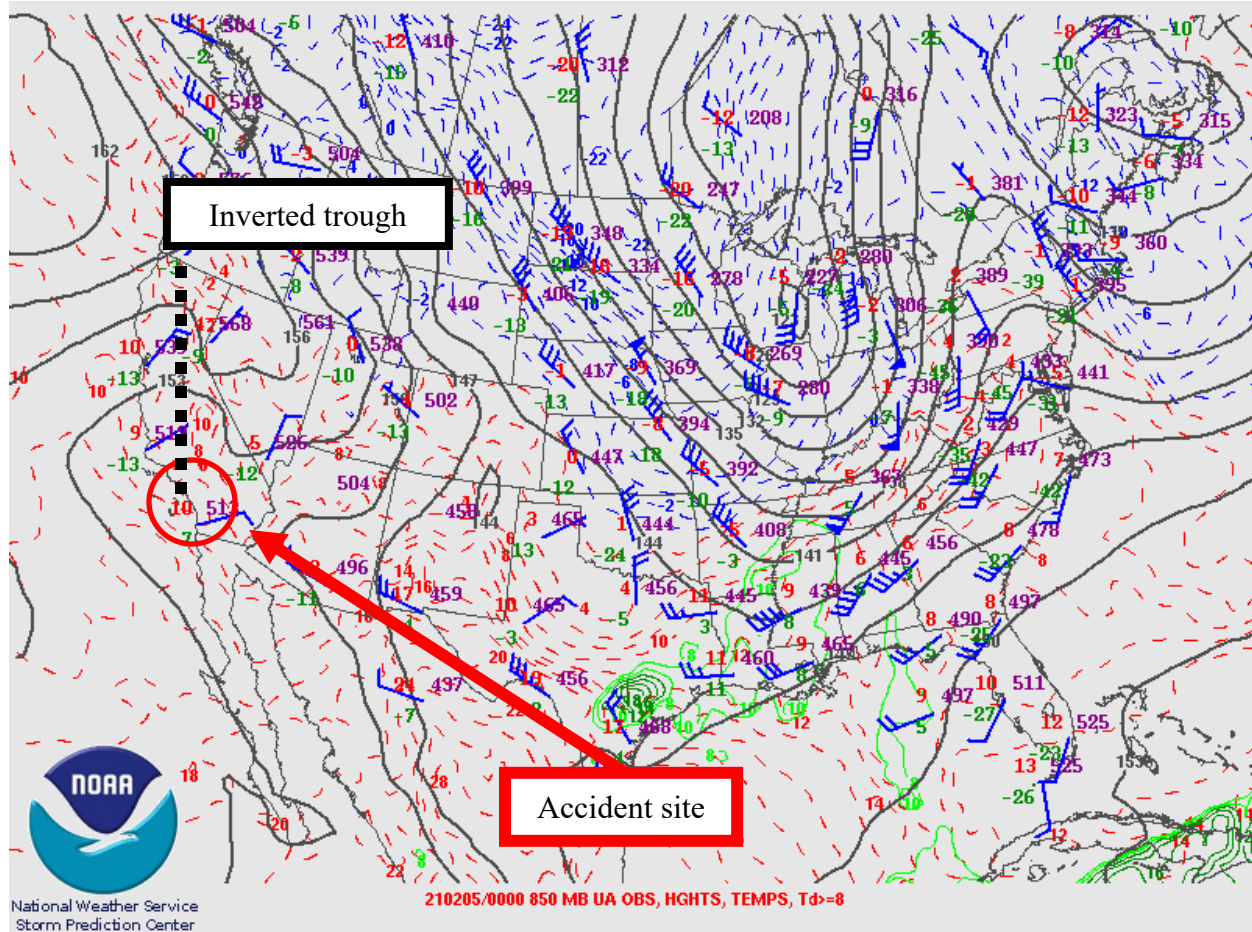


Figure 3 – 850-hPa Constant Pressure Chart for 1600 PST.

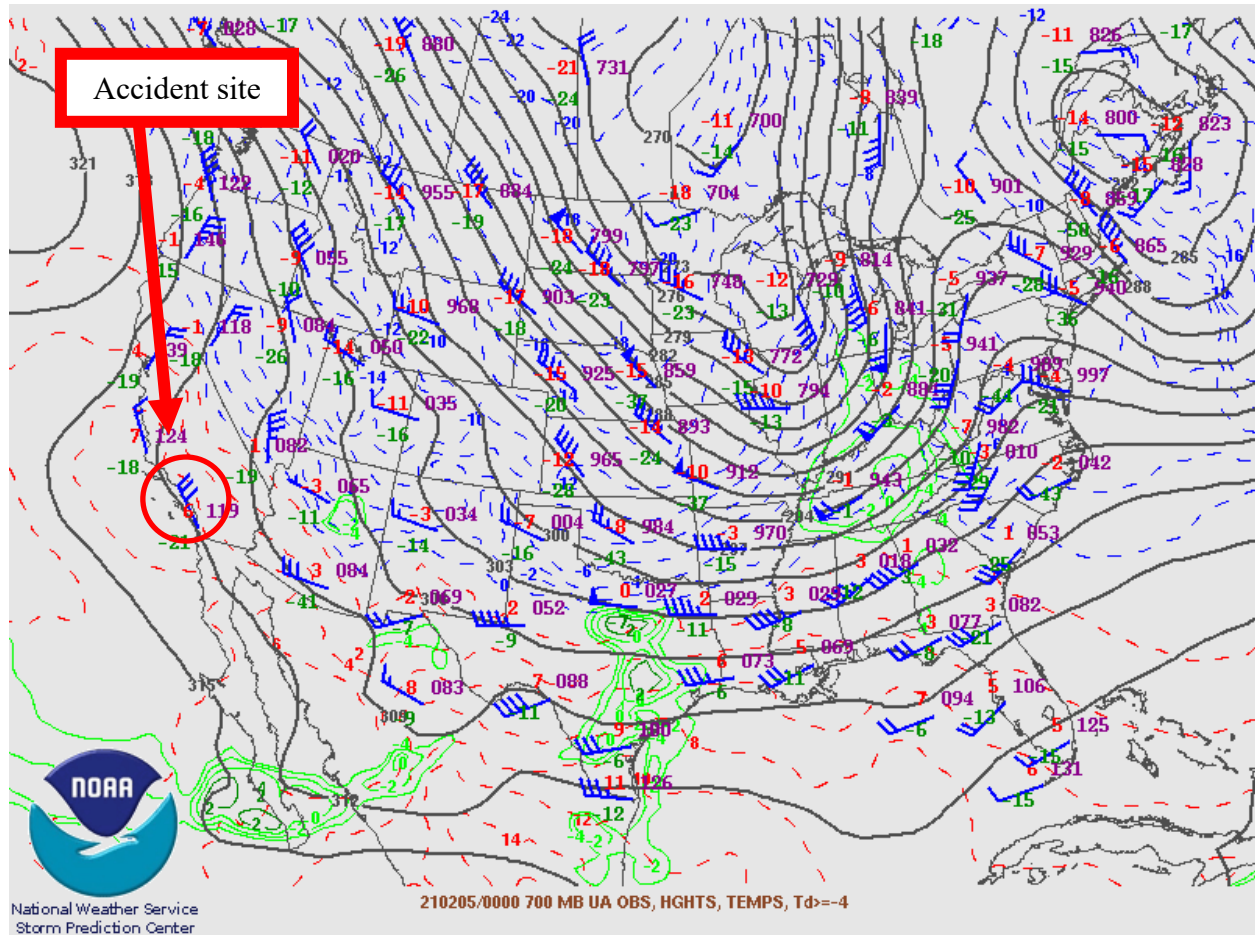


Figure 4 – 700-hPa Constant Pressure Chart for 1600 PST.

2.0 Surface Observations

The area surrounding the accident site was documented using official Aviation Routine Weather 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.

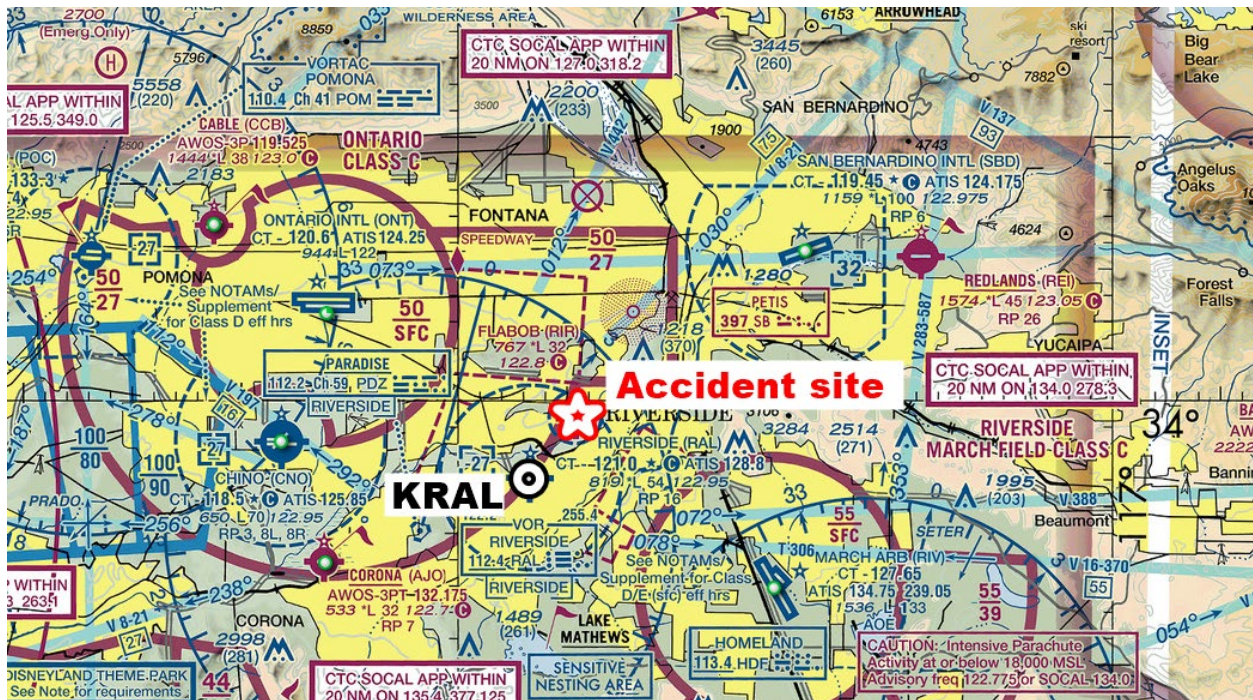


Figure 5 – Sectional map of the accident area with the location of the accident site and surface observation site.

Riverside Municipal Airport (KRAL) had the closest official weather station to the accident site. KRAL had an Automated Surface Observing System (ASOS⁴) whose longline⁵ reports were supplemented by air traffic control (ATC) when the tower was in operation⁶. KRAL ASOS was located 3 miles southwest of the accident site, at an elevation of 819 ft, and had a 11.5° easterly magnetic variation⁷. The following automated longline observations were disseminated during the times surrounding the accident:⁸

[0930 PST] SPECI KRAL 041730Z 00000KT 3SM BR FEW006 11/08 A3015 RMK
AO2 T01060083=

⁴ ASOS – Automated Surface Observing System is equipped with meteorological instruments to observe and report wind, visibility, weather phenomena, ceiling, temperature, dewpoint, altimeter, and barometric pressure.

⁵ “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 observations is the primary vehicle through which the general global public has access to surface weather observations, particularly outside of the aviation community.

⁶ ATC hours of operation between 0700 and 1700 local M-F and 0600 to 1600 on Sa and Su.

⁷ Magnetic variation – The angle (at a particular location) between magnetic north and true north. Latest measurement taken from <https://skyvector.com/>

⁸ The bold sections in this NWS product and the rest of the products in this report are intended to highlight the text 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.

[0953 PST] METAR KRAL 041753Z 26003KT 5SM HZ FEW008 12/08 A3015 RMK AO2 SLP202 T01170083 51015=

[1053 PST] METAR KRAL 041853Z 26004KT 9SM CLR 13/08 A3014 RMK AO2 SLP198 T01330078=

[1142 PST] SPECI KRAL 041942Z 01012G20KT 10SM CLR 19/M03 A3011 RMK AO2 T01891028=

[1153 PST] METAR KRAL 041953Z 03013G21KT 10SM CLR 19/M03 A3010 RMK AO2 SLP183 T01891033=

ACCIDENT TIME 1245 PST

[1253 PST] METAR KRAL 042053Z 01012G20KT 10SM CLR 19/M03 A3008 RMK AO2 SLP176 T01941028 58024=

[1353 PST] METAR KRAL 042153Z 02011G17KT 10SM CLR 21/M03 A3007 RMK AO2 SLP172 T02061033=

KRAL weather at 1153 PST, wind from 030° at 13 knots with gusts to 21 knots, visibility 10 miles or greater, clear skies below 12,000 ft above ground level (agl), temperature of 19°Celsius (C), dew point temperature of -3°C, and an altimeter setting of 30.10 inches of mercury (inHg). Remarks: automated station with a precipitation discriminator, sea level pressure 1018.3 hPa, temperature 18.9°C, dew point temperature -3.3°C.

KRAL weather at 1253 PST, wind from 010° at 12 knots with gusts to 20 knots, visibility 10 miles or greater, clear skies below 12,000 ft agl, temperature of 19°C, dew point temperature of -3°C, and an altimeter setting of 30.08 inHg. Remarks: automated station with a precipitation discriminator, sea level pressure 1017.6 hPa, temperature 19.4°C, dew point temperature -2.8°C, 3-hourly pressure decrease of 2.4 hPa.

The observations from KRAL surrounding the accident time indicated VFR⁹ conditions with north to northeast wind gusts to 21 knots.

⁹ 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.

**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.

3.0 Upper Air Sounding

A High-Resolution Rapid Refresh (HRRR)¹⁰ model sounding was created for the accident site for 1300 PST using a surface elevation of 837 ft.¹¹ The 1300 PST HRRR sounding was plotted on a standard Skew-T Log P diagram¹² 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 RAOB¹³ software package. The sounding depicted the lifted condensation level (LCL)¹⁴ at 11,065 ft msl and the convective condensation level (CCL)¹⁵ at 18,322 ft msl. The freezing level was located at 13,118 ft msl. The precipitable water value was 0.30 inches.

¹⁰ 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.

¹¹ HRRR sounding was created using NOAA Air Resource Laboratory: <https://ready.arl.noaa.gov/READYamet.php>

¹² 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.

¹³ RAOB – (The complete Rawinsonde Observation program) is an interactive sounding analysis program developed by Eosonde Research Services, The Villages, Florida.

¹⁴ LCL - The height at which a parcel of moist air becomes saturated when it is lifted dry adiabatically.

¹⁵ 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.

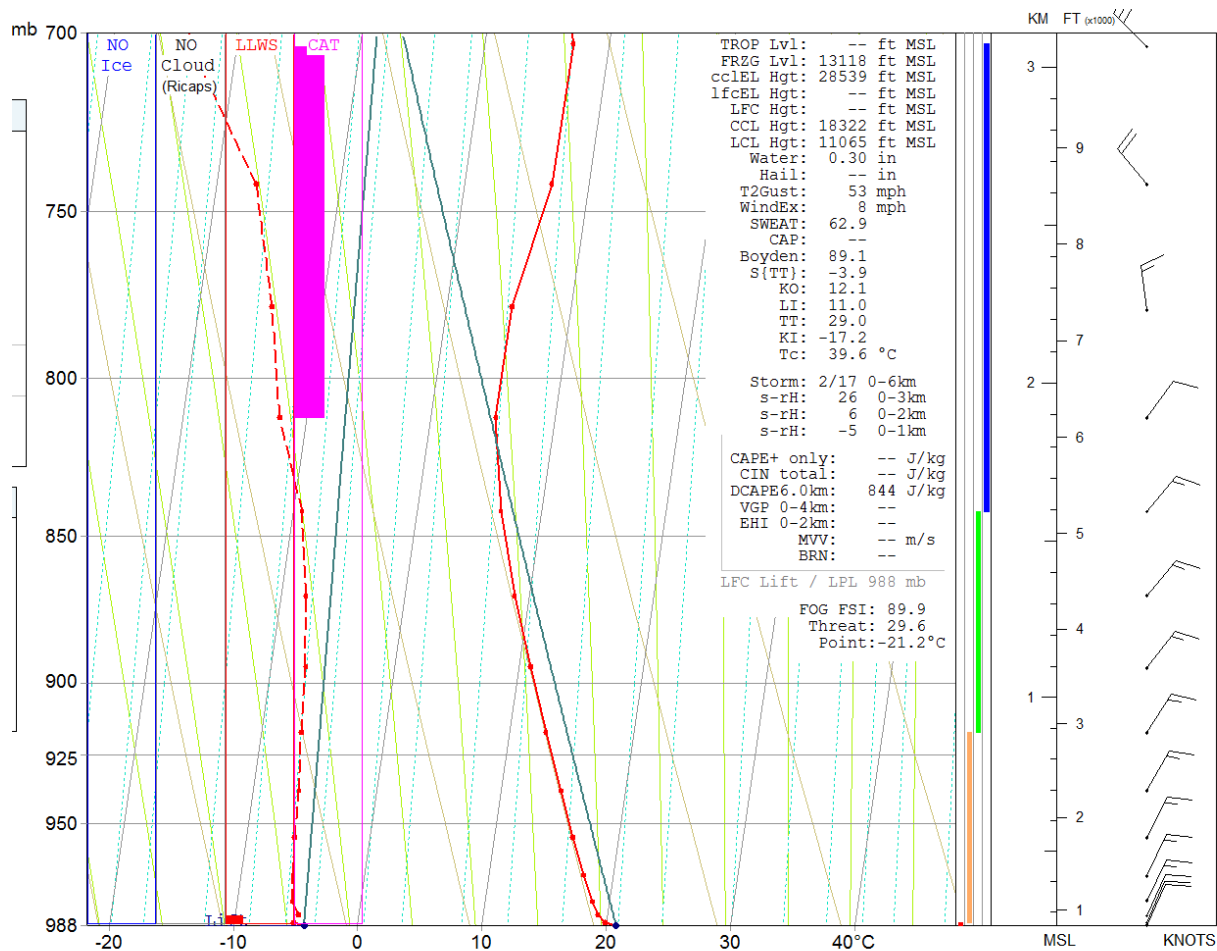


Figure 6 – 1300 PST HRRR sounding.

The 1300 PST HRRR sounding indicated an unstable environment from the surface through 3,000 ft msl. RAOB did not indicated cloud cover or icing conditions below 10,000 ft msl.

The 1300 PST HRRR sounding wind profile indicated a near surface wind from 023° at 10 knots with little variation in height through 8,000 ft then the wind backing¹⁶ to the northwest through 10,000 ft. The wind speed increased to 15 knots by 1,500 ft msl and then up to 30 knots by 10,000 ft. RAOB indicated the possibility of light low-level wind shear (LLWS) between the surface and 200 ft agl. RAOB indicated the possibility of light to moderate clear-air turbulence above 7,000 ft msl.

¹⁶ A counter-clockwise turning of the wind with height in the northern hemisphere.

4.0 Satellite Data

The Geostationary Operational Environmental Satellite number 17 (GOES-17) 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. Visible and infrared imagery (GOES-17 bands 2 and 13) at wavelengths of 0.64 microns (μm) and 10.3 μm , respectively, were retrieved for the period from 1000 PST through 1500 PST and reviewed, and the closest images to the time of the accident were documented.

Figure 7 presents the GOES-17 visible imagery from 1250 PST at 2X magnification with the accident site highlighted with a red square. There was no cloud cover above the accident site at the accident time. It should be noted these figures have not been corrected for any parallax error.

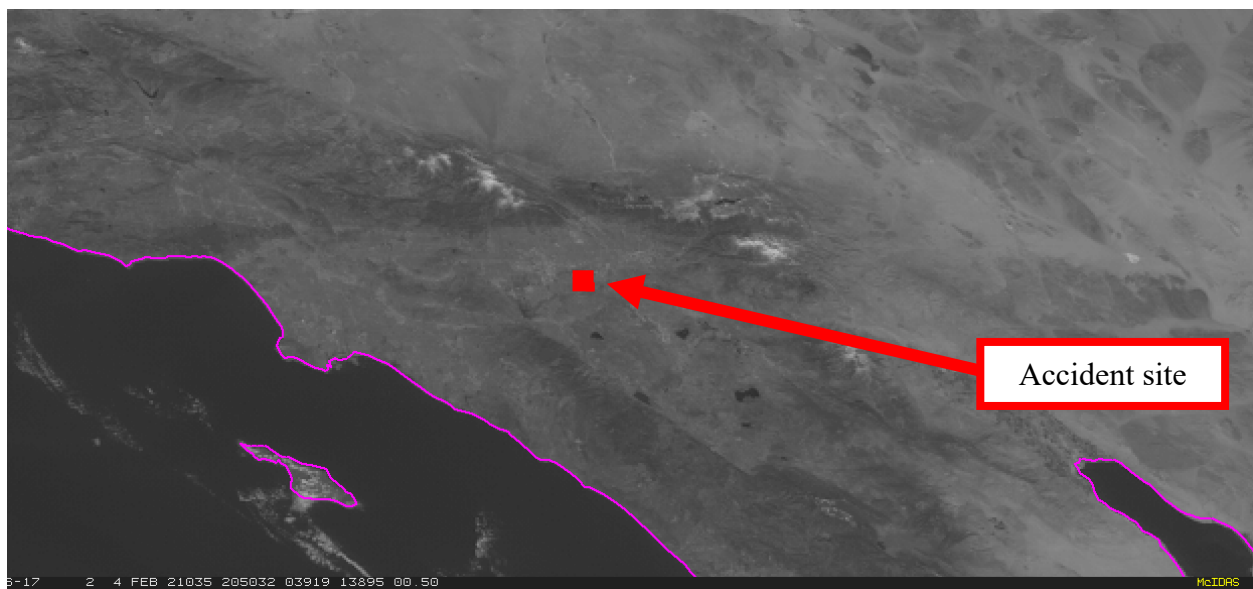


Figure 7 – GOES-17 visible image at 1250 PST.

5.0 Regional Radar Imagery Information

A regional view of the NWS national composite radar mosaic is included as figure 8 for 1245 PST with the approximate location of the accident site marked within a red circle. The image depicted no precipitation echoes above the accident site at the accident time.

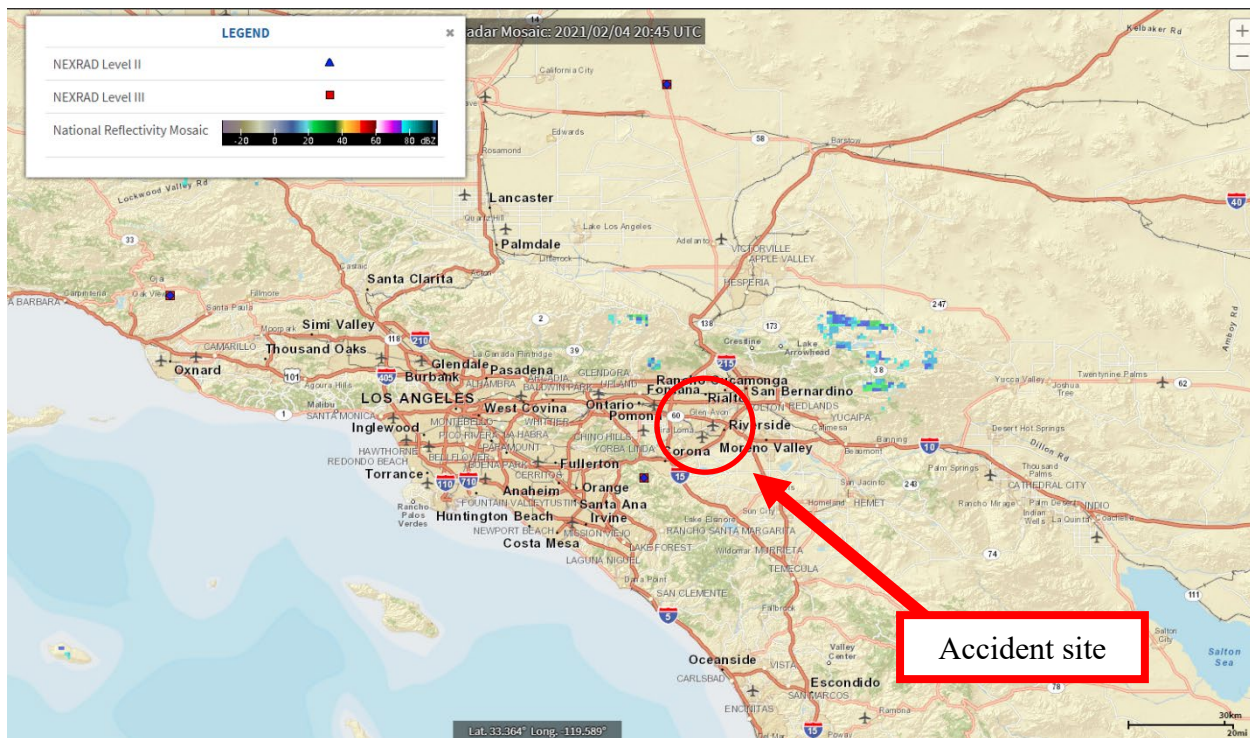


Figure 8 – Regional Composite Reflectivity image for 1245 PST.

6.0 Pilot Reports

The following are the publicly longline disseminated¹⁷ pilot reports (PIREPs) distributed into the national airspace (NAS) within 100 miles of the accident site from about two hours prior to the accident time to about four hours after the accident time for below 18,000 ft above msl. One of the PIREPs included an urgent PIREP of severe turbulence at 1235 PST at 4,000 ft msl 15 miles northwest of the accident site:

CNO UA /OV CNO/TM 1856/FL025/TP DA40/WX VIS06SM/TB MOD CHOP =

CMA UUA /OV CMA08002/TM 1906/FL005/TP C172/WV 22006KT/RM LLWS +10KT SHORT FINAL RWY26=

CMA UA /OV 31001/TM 1934/FL010/TP C172 /TB MOD TURB=

CNO UUA /OV CNO080002/TM 1944/FL015/TP SR22/WV LLWS/RM +/- 15KTS ON FINAL=

BUR UA /OV FIM/TM 2005/FL70/TP B737/TB MDT CHOP/RM MDT CHOP ON ROKKR STAR 70 TO 40=

ONT UA /OV KSBD/TM 2010/FL080/TP B737/TB MODERATE =

ONT UUA /OV 10 N ONT/TM 2035/FL040/TP C172/TB SEVERE TURB =

RAL UA /OV RAL/TM 2044/FL010/TP C172/RM LLWS +/- 5KTS SHORT FINAL RY 34=

¹⁷ Only pilot reports with the World Meteorological Organization headers UBCA** were considered. These do not include pilot reports only broadcast via radio.

CNO UA /OV KCNO/TM 2110/FL020/TP DA40/TB LGT-MOD/RM INBOUND CNO 4NM SOUTH=

CMA UUA /OV CMA08003/TM 2128/FL012/TP C172/RM LLWS -15KT 2-3 MILE FINAL=

CNO UA /OV KAJ0/TM 2200/FL015/TP C172/TB MOD TURB=

ONT UA /OV POC/TM 2250/FL7000/TP BE36/TB MDT =

ONT UA /OV SBD/TM 2255/FL8000/TP B737/TB MDT/RM 8000 DECENDING TO 5000 MODERATE TURB=

CNO UA /OV KCNO/TM 2300/FL020/TP P28A/TB LGT CHOP/RM LGT CHOP LAKE MATHEWS TO CHINO=

CNO UA /OV KCNO/TM 0011/FL020/TP P28A/TB NEG/RM INBOUND CNO RY26R=

RAL UUA /OV RAL250002/TM 0036/FL023/TP PA46/TB OCNL SEV/RM BETWEEN 021-024 A ROLL OF 30 DEGREES AND -20 KTS=

7.0 SIGMET

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

8.0 CWSU Advisories

The Los Angeles (ZLA) Air Route Traffic Control Center (ARTCC) Center Weather Service Unit (CWSU) was responsible for the accident region. The ZLA CWSU did not issue a Meteorological Impact Statement (MIS) for the accident site at the accident time. ZLA CWSU did issue a Center Weather Advisory (CWA) 1-minute after the accident time at 1246 PST for an area of occasional severe turbulence between the surface and 4,000 ft msl with LLWS possible and strong updrafts:

FAUS21 KZLA 042046

ZLA1 CWA 042045

ZLA CWA 101 VALID UNTIL 042245

FROM 40ENE LAX-40NW TRM-35WNW TRM-25E LAX-40NE LAX-40ENE LAX

AREA OCNL SEV TURB SFC-040. LLWS POSS. STRONG UDDF. RPRTD BY GA

ACFT. CA

=

9.0 AIRMETs

There were Airmen's Meteorological Information (AIRMET) advisories Sierra and Tango valid for the accident site at the accident time. The AIRMETs warned of IFR conditions due to mist and mountain obscuration conditions due to clouds, mist, and fog, and moderate turbulence below 12,000 ft msl:

WAUS46 KPCI 041809 AAA

WA6S

-SFOS WA 041809 AMD

AIRMET SIERRA UPDT 4 FOR IFR AND MTN OBSCN VALID UNTIL 042100

.

AIRMET IFR...WA OR CA AND CSTL WTRS
FROM 30WNW HUH TO 40SE YDC TO 50W EPH TO 20WSW YKM TO 40ESE BTG
TO 50SW DSD TO 40SE OED TO 60N FOT TO 90SW EUG TO 20SW ONP TO
70S HQM TO 20SSW HQM TO 30WNW TOU TO 30WNW HUH
CIG BLW 010/VIS BLW 3SM PCPN/BR/FG. CONDS CONTG BYD 21Z THRU 03Z.

.
AIRMET IFR...CA AND CSTL WTRS...UPDT
FROM 30ENE MOD TO 50SW HEC TO 50S TRM TO 20S MZB TO 50W MZB TO
50SSW CZQ TO 30WNW CZQ TO 30ENE MOD
CIG BLW 010/VIS BLW 3SM BR. CONDS ENDG BY 21Z.

.
AIRMET MTN OBSCN...CA
FROM 20SSW SAC TO 50WNW EHF TO 40SSE EHF TO 20NNW TRM TO 30WSW
BZA TO 20S MZB TO 20SSE LAX TO 50W RZS TO 30S PYE TO 20SSW SAC
MTNS OBSC BY CLDS/BR/FG. CONDS ENDG 15-18Z.

.
AIRMET MTN OBSCN...WA OR...UPDT
FROM 50SW YXC TO 30NW BOI TO 70S YKM TO 20NE OED TO 70W OED TO
ONP TO TOU TO HUH TO 50SW YXC
MTNS OBSC BY CLDS/PCPN/BR. CONDS CONTG BYD 21Z THRU 03Z.

.
OTLK VALID 2100-0300Z...IFR WA OR ID MT
BOUNDED BY 40SE YXC-60SE MLP-30WNW LKT-50ESE DNJ-50SW DNJ-20NW
BKE-90ESE YDC-40SE YXC
CIG BLW 010/VIS BLW 3SM PCPN/BR. CONDS DVLPG 21-00Z. CONDS CONTG
THRU 03Z.

....

WAUS46 KPCI 041445
WA6T
-SFOT WA 041445
AIRMET TANGO UPDT 3 FOR TURB VALID UNTIL 042100

.
AIRMET TURB...CA WY NV UT CO AZ NM AND CSTL WTRS
FROM CYS TO 40NW LAA TO 30S GLD TO 50W LBL TO 30ESE TBE TO 30W
INK TO 50S TUS TO BZA TO 80SSE ILC TO DVC TO 50SSW CHE TO CYS
MOD TURB BTN FL280 AND FL410. CONDS CONTG BYD 21Z ENDG 21-00Z.

.
AIRMET TURB...WA OR CA ID MT WY NV UT AZ AND CSTL WTRS
FROM 60S YXH TO 70S BIL TO 80SSE ILC TO BZA TO 20S MZB TO 220SW
MZB TO 120WSW PYE TO 30SW DSD TO 30SSW YDC TO 60S YXH
MOD TURB BTN FL280 AND FL400. CONDS CONTG BYD 21Z THRU 03Z.

.
AIRMET TURB...CA NV AZ AND CSTL WTRS
FROM 50ESE OAL TO 60NNE PGS TO 60ESE BZA TO BZA TO MZB TO 40NW
RZS TO 50ESE OAL
MOD TURB BLW 120. CONDS CONTG BYD 21Z THRU 03Z.

.
OTLK VALID 2100-0300Z
AREA 1...TURB WA OR CA ID MT WY NV UT CO AZ NM AND CSTL WTRS
BOUNDED BY 70S YYN-40SSW MLS-40S DDY-70SE TBE-60SSW TXO-50SSW
TUS-BZA-20S MZB-220SW MZB-120SW PYE-40SSE REO-50SE YDC-70S YYN
MOD TURB BTN FL280 AND FL400. CONDS CONTG THRU 03Z.

.
AREA 2...TURB WA OR AND CSTL WTRS
BOUNDED BY 80ESE YDC-30S PDT-60SSE BTG-20WSW BTG-20NW TOU-80ESE

YDC
MOD TURB BLW 120. CONDS DVLPG 21-00Z. CONDS CONTG THRU 03Z.
....

10.0 Graphical Forecasts for Aviation

The Graphical Forecasts for Aviation (GFA) products issued before the accident flight and valid at 1300 PST are shown in attachment 1. The GFA surface forecast products indicated VFR surface visibilities and a surface wind from the north at 5 knots with gusts to 15 knots. The GFA cloud forecast valid before departure for around the accident time indicated clear skies. For more information, please see attachment 1.

11.0 Terminal Aerodrome Forecast

Ontario International Airport (KONT) was the closest airport to the accident site with an NWS¹⁸ Terminal Aerodrome Forecast (TAF). KONT was located 10 miles northwest of the accident site. The KONT TAF valid at the time of the accident was issued at 0932 PST and was valid for a 30-hour period beginning at 1000 PST. The 0932 PST TAF for KONT was as follows:

TAF KONT 041732Z 0418/0524 VRB04KT P6SM FEW007 SCT015 WS020/02020KT
TEMPO 0418/0419 BKN015
FM042100 34006KT P6SM SKC WS020/02020KT
FM050400 VRB05KT P6SM SKC FM052100 26009KT P6SM SKC=

Between 1000 and 1300 PST, the forecast expected a variable wind at 4 knots, greater than 6 miles visibility, few clouds at 700 ft agl, scattered clouds at 1,500 ft agl, and LLWS at 2,000 ft agl with wind from 020° at 20 knots.

12.0 NWS Area Forecast Discussion

The NWS office in San Diego, California, (WFO SGX) issued an Area Forecast Discussion (AFD) at 0900 PST (closest AFD to the accident time with an aviation section). The AFD discussed the low cloud clearing by 1000 PST and areas of LLWS and moderate up and downdrafts over and west of the mountainous terrain:

FXUS66 KSGX 041700
AFDSGX

Area Forecast Discussion
National Weather Service San Diego CA
900 AM PST Thu Feb 4 2021

.SYNOPSIS...

Low clouds that made it into portions of the western valleys overnight will continue to dissipate through the morning. A warming trend is expected through the weekend. Periods of weak to locally

¹⁸ According to NWS Instruction 10-813: "A NWS TAF consists of the expected meteorological conditions significant to aviation at an airport for a specified time period. For the U.S., this is the area within five (5) statute miles (SM) of the center of an airport's runway complex." www.nws.noaa.gov/directives/sym/pd01008013curr.pdf

moderate Santa Ana winds will continue into Saturday. Onshore flow will return early next week, along with around seasonal temperatures, and periods of night and morning low clouds and fog.

&&

DISCUSSION...FOR EXTREME SOUTHWESTERN CALIFORNIA INCLUDING ORANGE... SAN DIEGO...WESTERN RIVERSIDE AND SOUTHWESTERN SAN BERNARDINO COUNTIES...

Areas of low clouds made it into portions of the western valleys overnight with the help of an eddy spinning off the coast. Clouds will continue to clear through the morning. Night and morning low clouds and fog should be mostly absent Friday and Saturday. They could begin to return to the coast Saturday night into Sunday morning. Periods of high clouds can be expected at times next week, as high pressure off the coast is weakened by passing shortwaves.

North to northeast winds are beginning to pick up in the San Bernardino mountains. As of 9AM, wind gusts have been mostly under 35 mph. Peak wind gusts are expected over the San Bernardino mountains, Santa Ana mountains, and portions of the Riverside county mountains, particularly through the San Geronimo Pass. Weaker and more localized offshore winds and are expected in the San Diego county mountains. Overall, strongest wind gusts are expected to be below 45 mph. Santa Ana winds on Friday and Saturday will be weaker and more localized. Peak gusts will be less than 35 mph. Onshore flow is expected to return by Sunday.

Temperatures today are expected to be near average for this time of year. Widespread above average temperatures are expected Friday and Saturday. Saturday will be the warmest day of the week. Highs will be about 5 degrees above average near the coast and in the High Desert, and around 10 degrees above average in the valleys and low desert. Cooling will begin on Sunday, with below average temperatures expected west of the mountains by Monday.

&&

.AVIATION...

041610Z...Low clouds cover most coastal areas and western valleys this morning. Bases are now around 2000 feet MSL with tops to 2500 feet. Vis reduced 0-5SM where clouds and terrain intersect with higher terrain obscured. Most areas will clear by 18Z. Little or no coastal clouds expected tonight into Friday. Elsewhere, mostly clear skies and unrestricted vis through tonight.

North/northeast winds over the mountains, and into the foothills with local gusts 25-35 kt could produce areas of LLWS and mod up/down drafts over and west of the mountains until about 00Z Friday.

&&

.MARINE...

Northwest winds this afternoon and Friday afternoon with occasional gusts approaching 20 kts. Otherwise, no hazardous marine conditions

are expected through Monday.

&&

.SKYWARN...

Skywarn activation is not requested. However weather spotters are encouraged to report significant weather conditions.

&&

.SGX WATCHES/WARNINGS/ADVISORIES...

CA...NONE.

PZ...NONE.

&&

\$\$

13.0 Winds and Temperature Aloft Forecast

The NWS 1155 PST Winds and Temperature Aloft forecast valid for the closest point to the accident site is included below:

FBUS31 KWNO 041955

FD1US1

DATA BASED ON 041800Z

VALID 050000Z FOR USE 2000-0300Z. TEMPS NEG ABV 24000

FT 3000 6000 9000 12000 18000 24000 30000 34000 39000

ONT 0311 0317+07 3324+07 3223+02 3439-14 3437-28 353543 314050 276954

The closest forecast point to the accident site was Ontario, California, (ONT). The 1155 PST ONT forecast for use between 1200 PST and 1900 PST indicated a wind at 3,000 ft from 030° at 11 knots, a wind at 6,000 ft from 030° at 17 knots with a temperature of 7°C, and a wind at 9,000 ft from 330° at 24 knots with a temperature of 7°C.

14.0 Pilot Weather Briefing

The accident pilot did not request nor receive weather information¹⁹ from Leidos Flight Service, or the commercial vendor ForeFlight. There is no record of the accident pilot receiving or retrieving any other weather information before or during the accident flight.

¹⁹ https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_91-92.pdf

15.0 Astronomical Data

The astronomical data obtained for the accident site on February 4, 2021, indicated the following:

SUN	
Begin civil twilight	0618 PST
Sunrise	0644 PST
Sun transit	1204 PST
Accident time	1245 PST²⁰
Sunset	1724 PST
End civil twilight	1750 PST

E. LIST OF ATTACHMENTS

Attachment 1 – GFA valid for the accident site at accident time

Submitted by:

Paul Suffern
Senior Meteorologist

²⁰ Inserted accident time for reference and context.