



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

December 14, 2017

Weather Study

METEOROLOGY

GAA18CA036

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A. ACCIDENT

Location: Near Las Vegas, New Mexico
Date: November 5, 2017
Time: 1145 mountain standard time
1845 Coordinated Universal Time (UTC)
Airplane: SOCATA TBM700, Registration: N893CA

B. METEOROLOGISTS

Paul Suffern	Jennifer Stark
Senior Meteorologist	NWS Meteorologist on detail to the NTSB
Operational Factors Division (AS-30)	Meteorologist in Charge
National Transportation Safety Board	WFO Pueblo

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 the NTSB's Washington D.C. office and from official National Oceanic and Atmospheric Administration (NOAA) National Weather Service (NWS) sources including the National Centers for Environmental Information (NCEI). All times are mountain standard time (MST) on November 5, 2017, and are based upon the 24-hour clock, where local time is -7 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 site was located at latitude 35.65° N, longitude 105.14° W, at an approximate elevation of 6,877 feet (ft).

D. WEATHER INFORMATION

1.0 Synoptic Situation

The synoptic or large scale migratory weather systems influencing the area were documented using standard NWS charts issued by the National Center for Environmental Prediction and the Weather Prediction Center, located in College Park, Maryland. These are the base products used in describing synoptic weather features and in the creation of forecasts and warnings for the NWS. Reference to these charts can be found in the joint NWS and Federal Aviation Administration Advisory Circular "Aviation Weather Services", AC 00-45H.

1.1 Surface Analysis Chart

The southwestern United States section of the NWS Surface Analysis Chart for 1100 MST is provided as figure 1 with the approximate location of the accident site marked with the red star. A cold front stretched from Central Oklahoma, through the Texas Panhandle, and into southeast Colorado. A trough¹ of low pressure extended from Central Colorado westward into Central Nevada. Surface temperatures were in the 70s degrees Fahrenheit (°F) over eastern New Mexico. Surface winds from the southwest at 15 to 20 knots across New Mexico. Temperature-dew point spreads of 30 to 40 °F were observed south of the cold front.

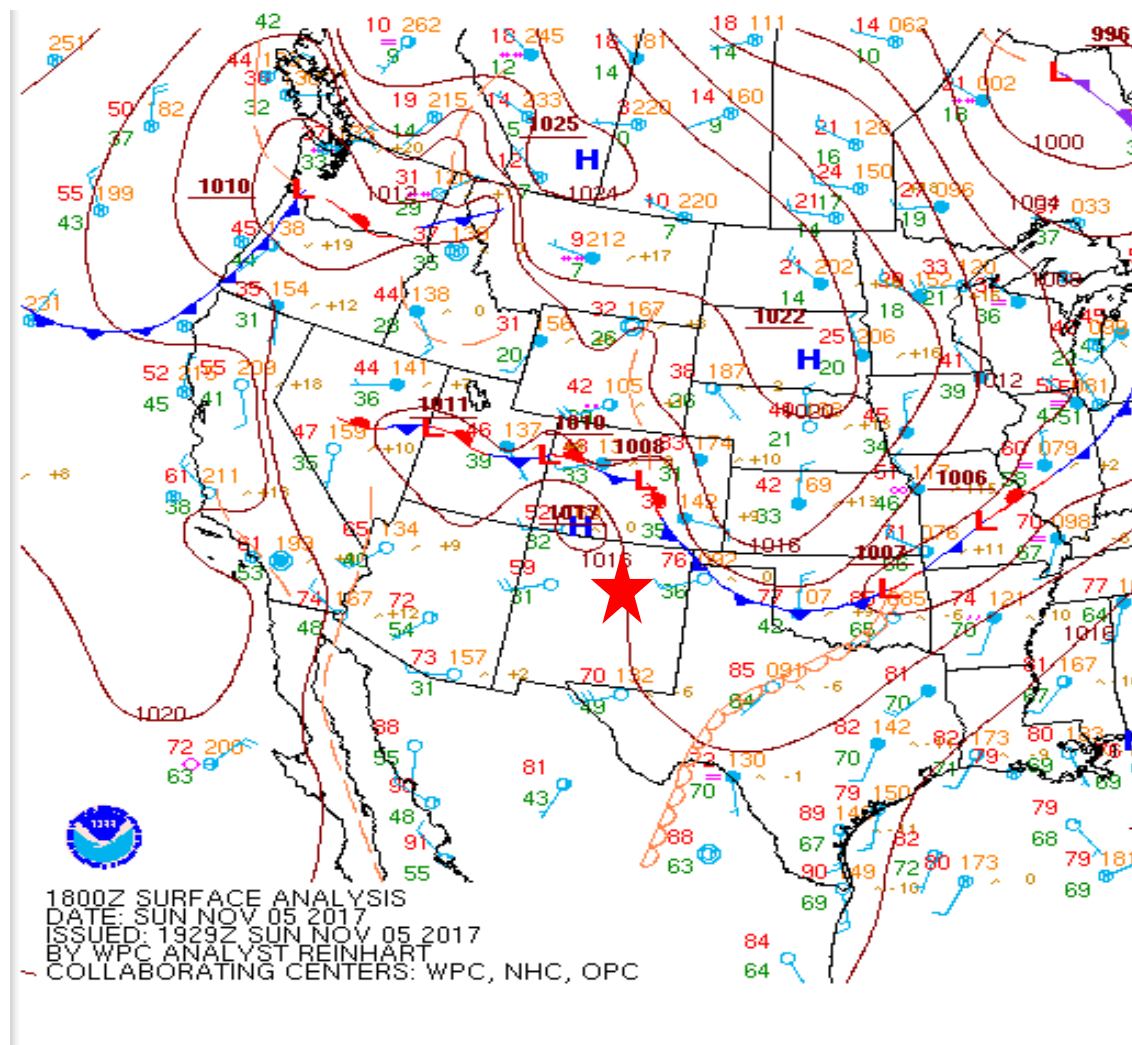


Figure 1 – NWS Surface Analysis Chart for 1200 MST

¹ Trough – An elongated area of relatively low atmospheric pressure or heights.

1.2 Upper Air Charts

The NWS Storm Prediction Center (SPC) Constant Pressure Charts for 0500 MST at 850-, 700-, 500-, and 250-hectopascals (hPa) are presented in figures 2 through 5. The 850-hPa chart showed the cold front (dashed line on 850-hPa Chart, figure 2) across the Central Plains and extending westward across Colorado. The 700-, 500-, and 250- charts indicated a broad area of west to southwest flow aloft across the southwestern United States, including the accident site. Westerly winds increased with height across the southwestern United States. At 250-hPa, a Jetstream with winds of 125 knots was located across the four corners region including northwest New Mexico, southern Colorado, and central Kansas.

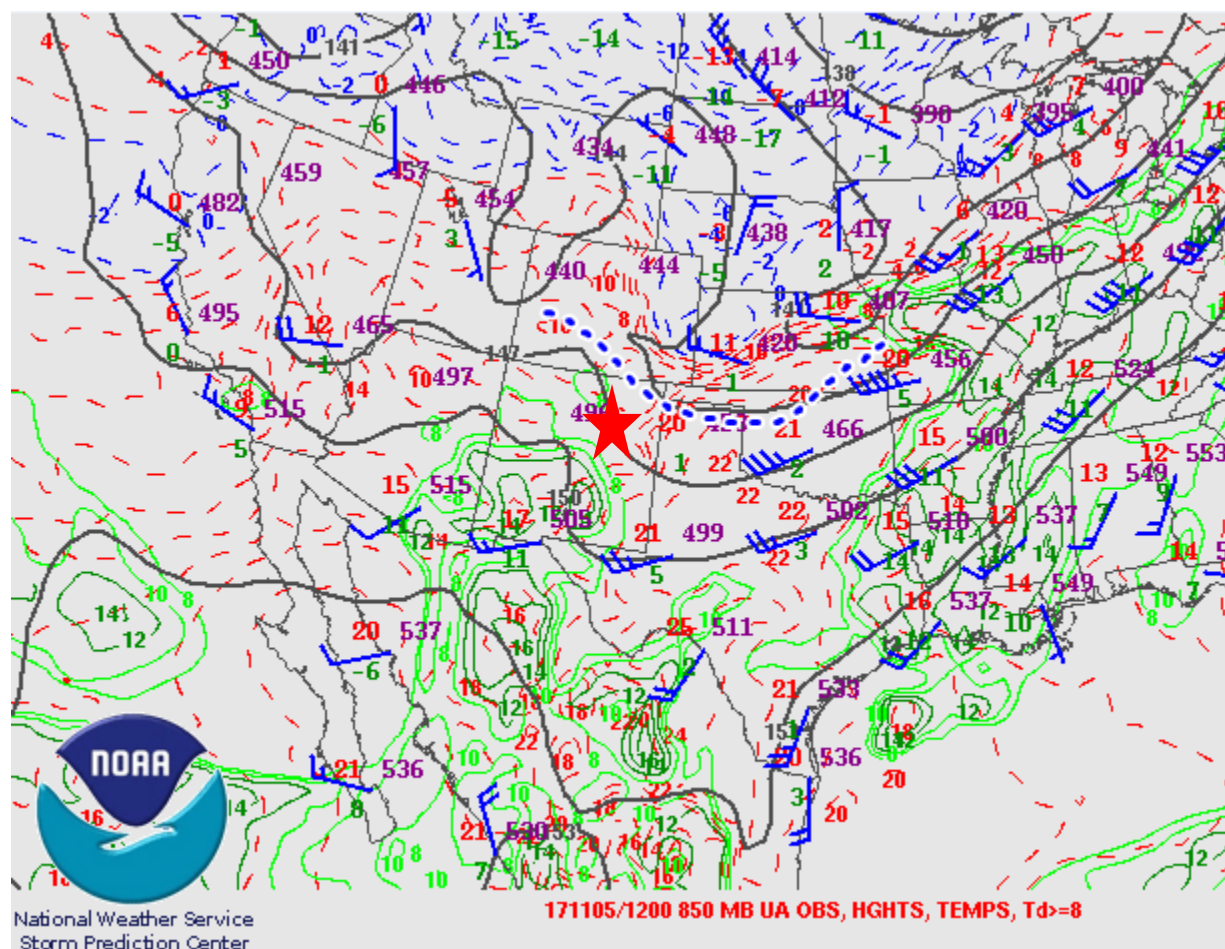


Figure 2 – 850-hPa Constant Pressure Chart for 0500 MST

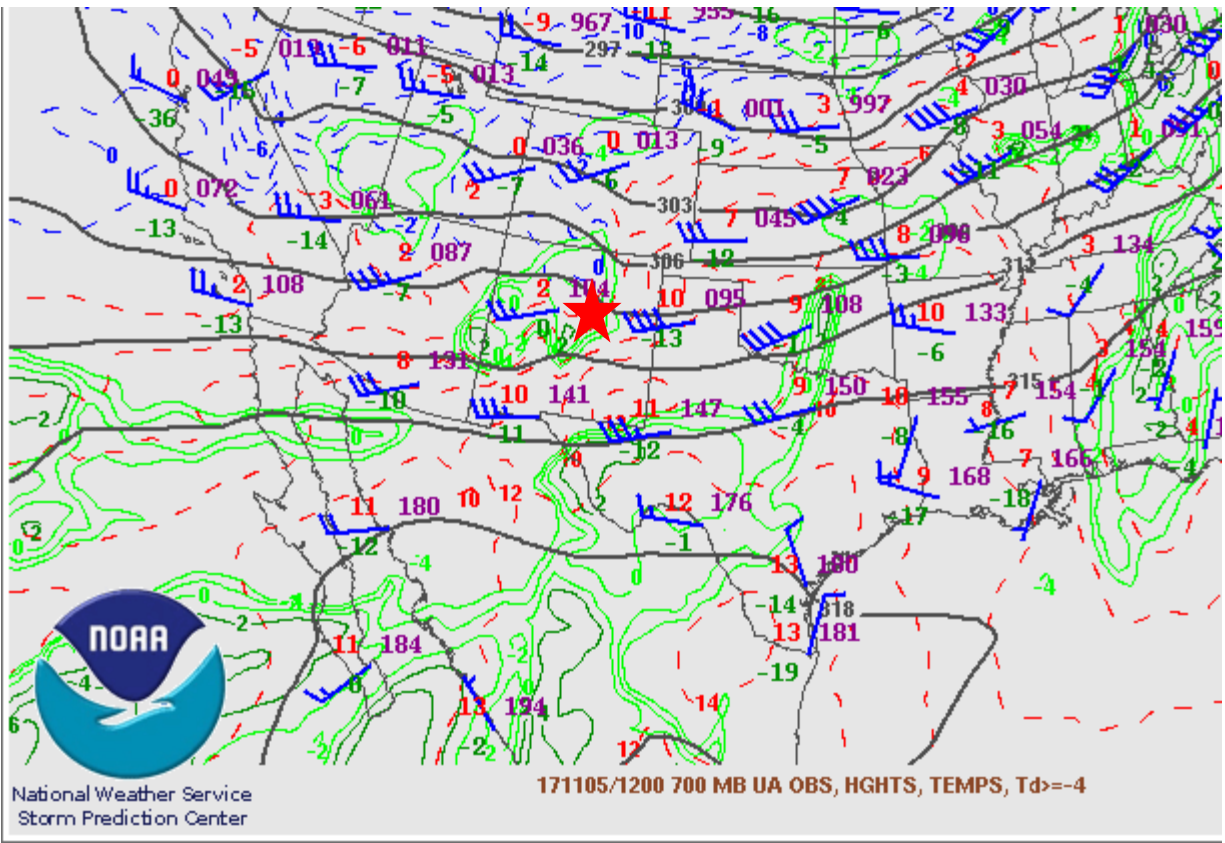


Figure 3 – 700-hPa Constant Pressure Chart for 0500 MST

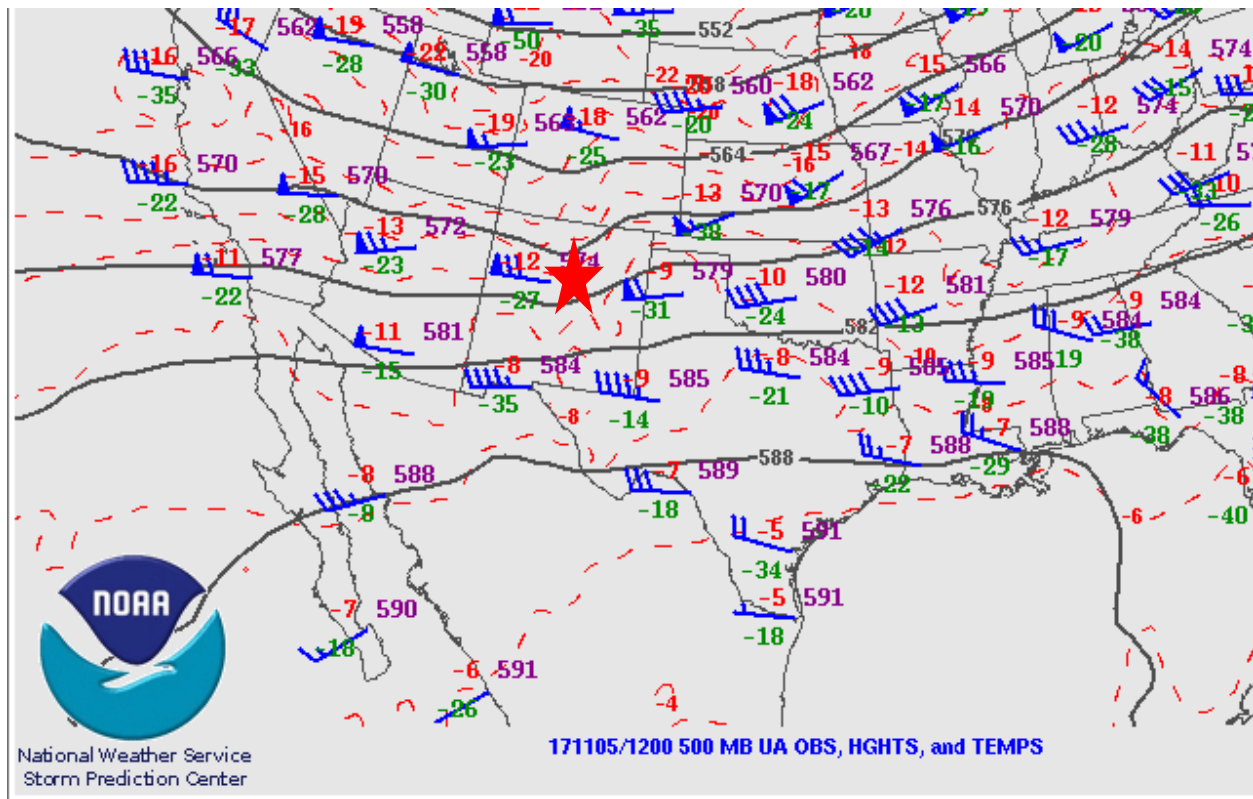


Figure 4 – 500-hPa Constant Pressure Chart for 0500 MST

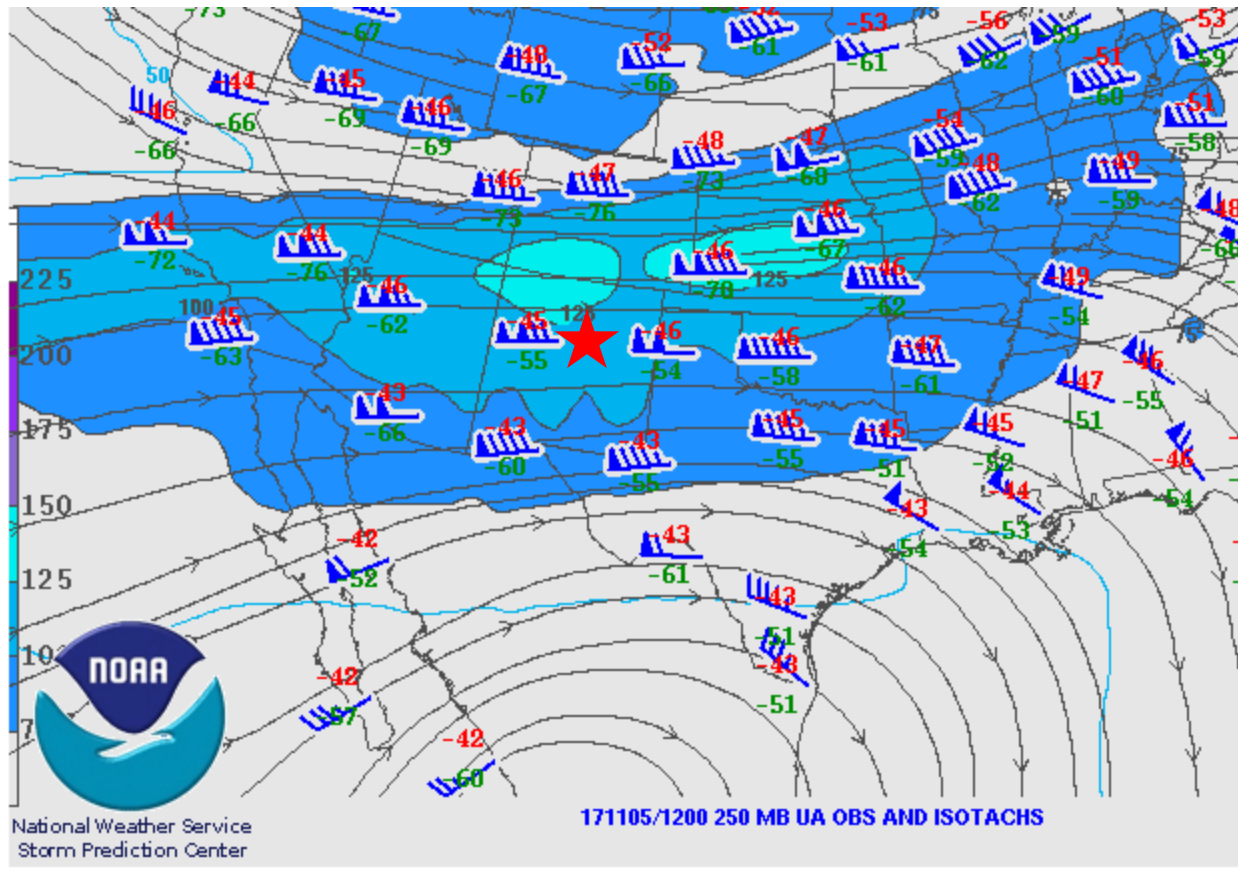


Figure 5 – 250-hPa Constant Pressure Chart for 0500 MST

2.0 SPC Products

Thunderstorms were not forecast for the accident site on the Day 1 convective outlook issued by the Storm Prediction Center.

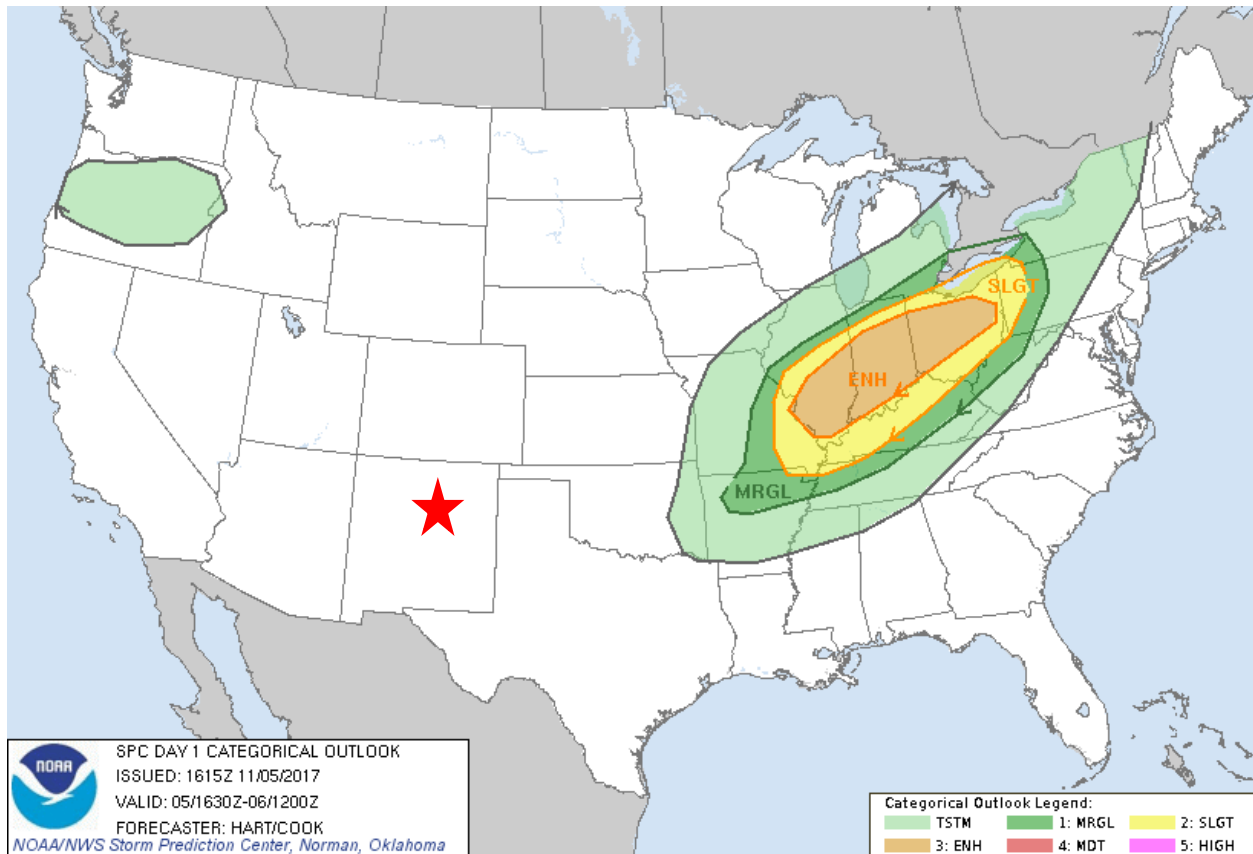


Figure 6 – SPC day 1 Convective Outlook valid at the time of the accident

3.0 Surface Observations

The area surrounding the accident site was documented using official Meteorological Aerodrome Reports (METARs) and Specials (SPECIs). Figure 7 is a sectional map of the region with the accident site and the closest weather reporting location marked.

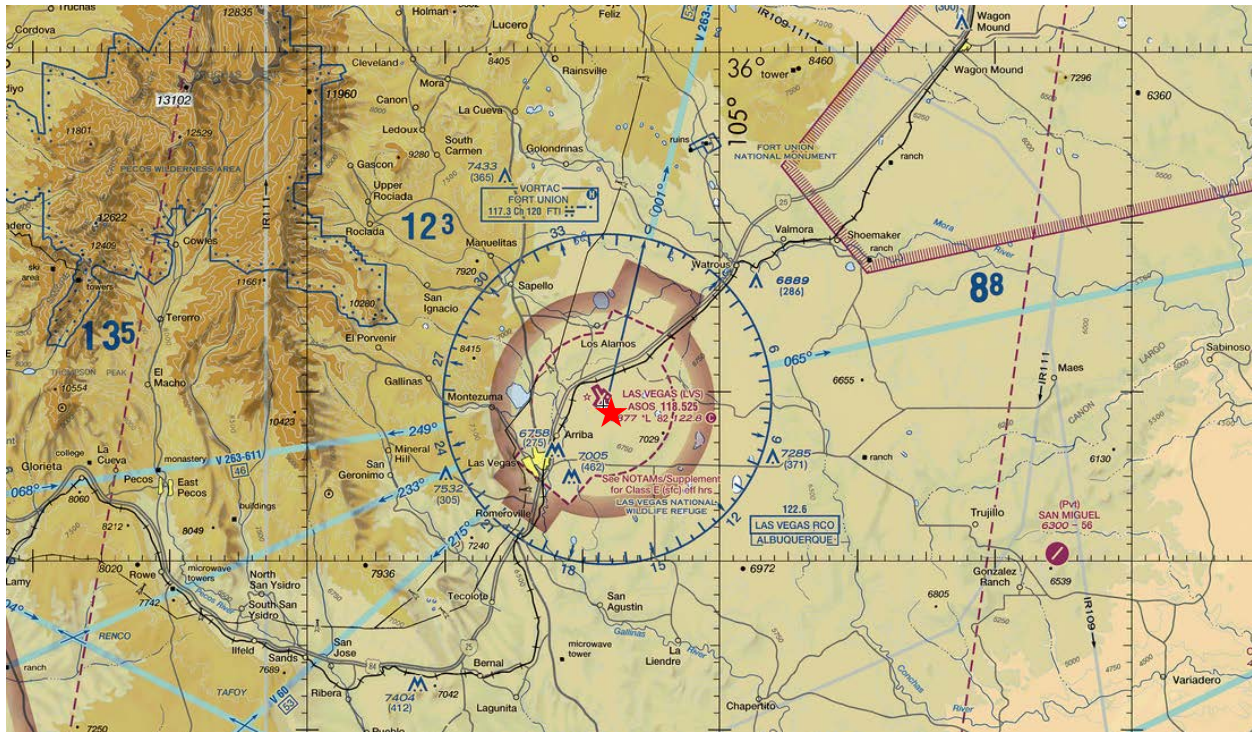


Figure 7 – Sectional Chart with the location of the accident site and surface observation site

The accident occurred at Las Vegas Municipal Airport (KLVS)² in Las Vegas, New Mexico, at an elevation of 6,877 feet. KLVS had an Automated Surface Observing System (ASOS)³ which was not augmented by a human observer. The following observations were taken and disseminated during the times surrounding the accident:⁴

**METAR KLVS 051753Z AUTO 25020G32KT 10SM CLR 14/M03 A3007
RMK AO2 PK WND 28035/1711 SLP116 T01441028 10150
20089 51005=**

**METAR KLVS 051853Z AUTO 27019G25KT 10SM CLR 16/M02 A3006
RMK AO2 PK WND 26032/1754 SLP101 T01611017=**

**METAR KLVS 051953Z AUTO 27021G29KT 10SM CLR 16/M02 A3004
RMK AO2 PK WND 27029/1953 SLP083 T01611017=**

² KLVS had a 13° easterly magnetic variation, which is the angle (at a particular location) between magnetic north and true north. The latest measurement for KLVS was taken in 1965 (<http://airnav.com/airport/KLVS>)

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 Bolded sections in this report highlight information that directly reference the weather conditions that affected the accident location around the accident time.

KLVS weather at 1053 MST, wind from 250° at 20 knots with gusts to 32 knots, 10 miles visibility or greater, clear skies below 12,000 ft above ground level (agl), temperature of 14° Celsius (C), dew point temperature of -3° C, and an altimeter setting of 30.07 inches of mercury. Remarks: automated station with a precipitation discriminator, peak wind from 280° at 35 knots at 1011 MST, sea level pressure 1011.6 hPa, temperature of 14.4° C, dew point temperature of -2.8° C, 6-hourly maximum temperature of 15.0° C, 6-hourly minimum temperature of 8.9° C, 3-hourly pressure increase of 0.5 hPa.

KLVS weather at 1153 MDT, wind from 270° at 19 knots with gusts to 25 knots, 10 miles visibility or greater, clear skies below 12,000 ft agl, temperature of 16° C, dew point temperature of -2° C, and altimeter setting of 30.06 inches of mercury. Remarks: automated station with a precipitation discriminator, peak wind from 260° at 32 knots at 1054 MST, sea level pressure 1010.1 hPa, temperature 16.1° C, dew point temperature -1.7° C.

KLVS weather at 1253 MST, wind from 270° at 21 knots with gusts to 29 knots, 10 miles visibility or greater, clear skies below 12,000 ft agl, temperature of 16° C, dew point temperature of -2° C, and altimeter setting of 30.04 inches of mercury. Remarks: automated station with a precipitation discriminator, peak wind from 270° at 29 knots at 1253 MST, sea level pressure 1008.3 hPa, temperature 16.1° C, dew point temperature -1.7° C.

The following 5-minute observations were archived and provided by Center Weather Service Unit (CWSU) at the Albuquerque Air Route Traffic Control Center:

METAR KLVS 051800Z AUTO 26021G26KT 10SM CLR 16/M02 A3007
METAR KLVS 051805Z AUTO 25023KT 10SM CLR 15/M01 A3007
METAR KLVS 051810Z AUTO 24022KT 10SM CLR 15/M02 A3007
METAR KLVS 051815Z AUTO 27027KT 10SM CLR 15/M02 A3007
METAR KLVS 051820Z AUTO 27024G30KT 10SM CLR 15/M02 A3007
METAR KLVS 051825Z AUTO 26022KT 10SM CLR 16/M02 A3007
METAR KLVS 051830Z AUTO 27023G29KT 10SM CLR 16/M02 A3007
METAR KLVS 051835Z AUTO 27021G26KT 10SM CLR 16/M02 A3007
METAR KLVS 051840Z AUTO 27020G25KT 10SM CLR 16/M02 A3006

Accident 1845 UTC

METAR KLVS 051845Z AUTO 27018KT 10SM CLR 16/M02 A3006
METAR KLVS 051850Z AUTO 26018KT 10SM CLR 16/M02 A3006

KLVS weather from the 5-minute observation at 1130 MST, wind from 270° at 23 knots gusting to 29 knots, 10 miles visibility or greater, clear skies below 12,000 ft agl, temperature of 16° C, dew point temperature of -2° C, and altimeter setting of 30.07 inches of mercury.

KLVS weather from the 5-minute observation at 1135 MST, wind from 270° at 21 knots gusting to 26 knots, 10 miles visibility or greater, clear skies below 12,000 ft agl, temperature of 16° C, dew point temperature of -2° C, and altimeter setting of 30.07 inches of mercury.

KLVS weather from the 5-minute observation at 1140 MST, wind from 270° at 20 knots gusting to 25 knots, 10 miles visibility or greater, clear skies below 12,000 ft agl, temperature of 16° C, dew point temperature of -2° C, and altimeter setting of 30.06 inches of mercury.

KLVS weather from the 5-minute observation at 1145 MST, wind from 270° at 18 knots, 10 miles visibility or greater, clear skies below 12,000 ft agl, temperature of 16° C, dew point temperature of -2° C, and altimeter setting of 30.06 inches of mercury.

KLVS weather from the 5-minute observation at 1150 MST, wind from 260° at 18 knots, 10 miles visibility or greater, clear skies below 12,000 ft agl, temperature of 16° C, dew point temperature of -2° C, and altimeter setting of 30.06 inches of mercury.

4.0 Upper Air Data

A High-Resolution Rapid Refresh (HRRR)⁵ sounding for KLVS at 1100 MST was plotted on a standard Skew-T log P diagram⁶ with the derived stability parameters included in figure 8 (with data from the surface to 600-hPa, or about 14,000 ft above msl). This sounding data was analyzed using the RAOB⁷ software package. The sounding depicted the lifted condensation level (LCL)⁸ at 12,313 ft above msl, a convective condensation level (CCL)⁹ of 17,154 ft, and a freezing level of 13,212 ft. The precipitable water value was 0.31 inches.

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.

⁶ 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.

⁷ RAOB – (The complete Rawinsonde Observation program) is an interactive sounding analysis program developed by Environmental Research Services, Matamoras, Pennsylvania.

⁸ LCL - The height at which a parcel of moist air becomes saturated when it is lifted dry adiabatically.

⁹ 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.

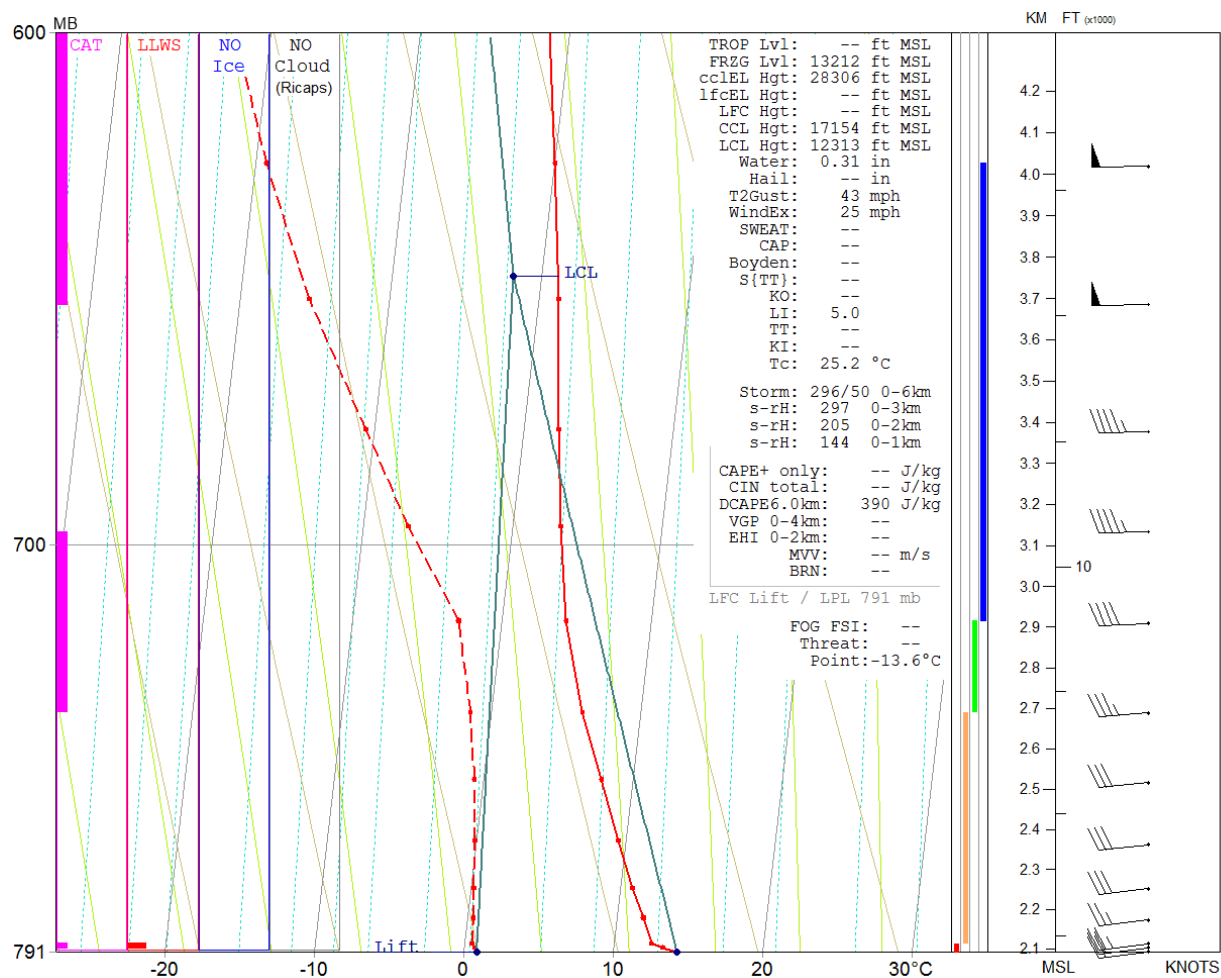


Figure 8 – 1100 MST KLVS model derived sounding

The 1100 MST HRRR sounding indicated a stable environment from 9,500 ft through 14,000 ft. From the surface through 9,500 ft, the 1100 MST HRRR sounding indicated an unstable to convectively unstable environment. RAOB did not indicate any clouds would be likely below 14,000 ft. This environment would have been supportive of few clouds over the mountainous terrain, but no precipitation given the lack of overall moisture in the environment (sections 1.1, 1.2, and 5.0).

The 1100 MST HRRR sounding wind profile indicated a surface wind from 262° at 21 knots with the wind remaining westerly through 14,000 ft. The wind speed increased to 52 knots at 13,186 ft, and continued to increase in speed with height. The mean 0 to 6 kilometer or 18,000 ft wind was from 296° at 50 knots. RAOB identified the potential for low-level wind shear (LLWS) near the surface and layers of clear air turbulence from the surface to 14,000 ft. No areas of icing were indicated by RAOB for below 14,000 ft.

5.0 Satellite Data

Visible data from the Geostationary Operational Environmental Satellite number 16 (GOES-16) 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 software. Visible imagery (GOES-16 bands 2) at wavelengths of 0.64 microns (μm) were retrieved for the period. Satellite imagery surrounding the time of the accident, from 1130 MST through 1145 MST at approximately 15-minute intervals were reviewed, and the closest images to the time of the accident are documented here.

Figures 9 and 10 present the GOES-16 visible imagery from 1130 and 1145 MST at 2X magnification with the accident site highlighted with a red square. Inspection of the visible imagery indicated no cloud cover over the accident site at the accident time, however, cumulus cloud development is noted over the mountainous terrain west of the accident location. It should be noted these figures have not been corrected for any parallax error.

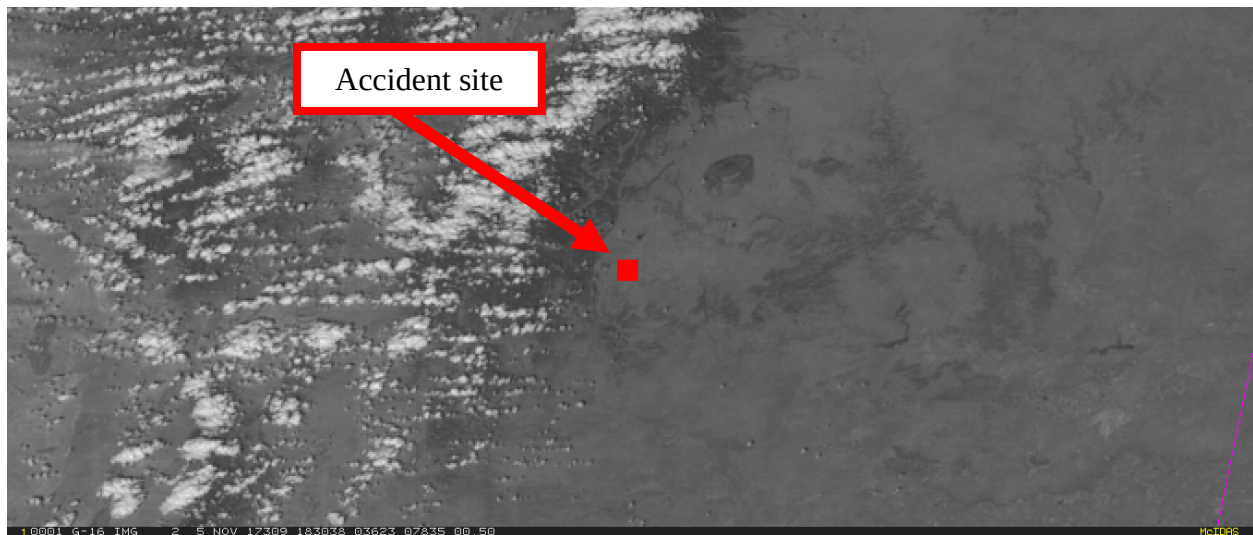


Figure 9 – GOES-16 visible image at 1130 MST

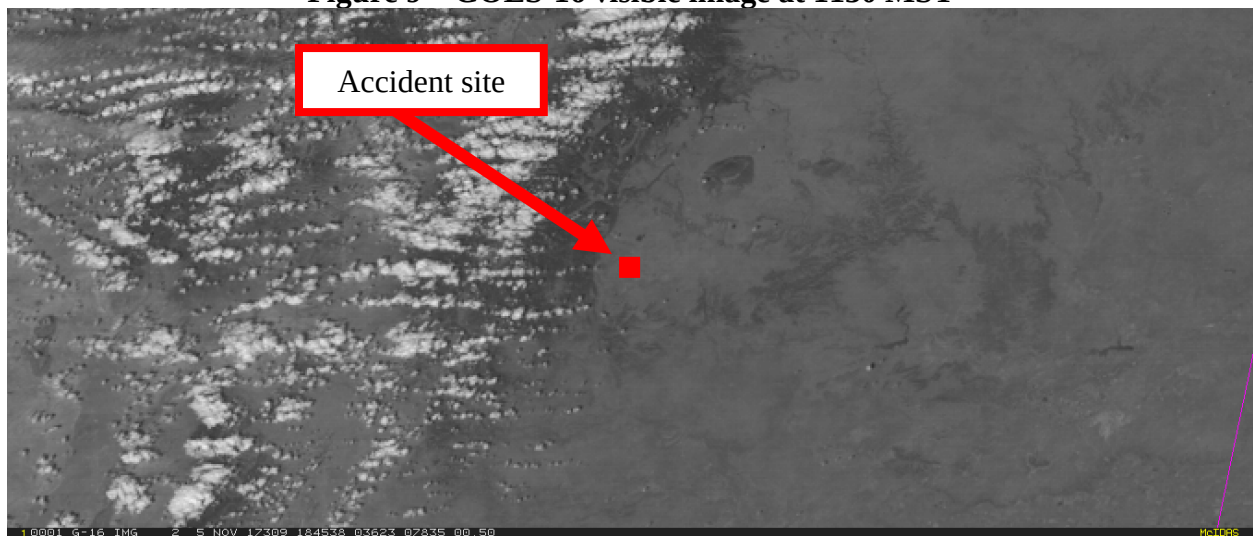


Figure 10 – GOES-16 visible image at 1145 MST

6.0 Radar Imagery Information

The closest NWS Weather Surveillance Radar-1988, Doppler (WSR-88D)¹⁰ to the accident site was the Albuquerque, New Mexico radar (KABX), which was located 71 miles southwest of the accident site at an elevation of 5,308 ft. Level II archive radar data were obtained from the NCEI utilizing the NEXRAD Data Inventory Search and displayed using the NOAA's Weather and Climate Toolkit software. The KABX data showed no precipitation targets above the accident site at the accident time.

7.0 Pilot Reports¹¹

All pilot reports (PIREPs) within 200 miles from the accident site from about three hours prior to the accident time to about three hours after the accident time were reviewed. There were two PIREPs issued into the national airspace for altitudes below FL180¹². Both PIREPs were located near Double Eagle Airport in New Mexico (KAEG), which was located about 87 miles southwest of the accident site.

AEG UA /OV TUS-AEG/TM 1625/FL115/TP CTLS/TB MDT SFC-115=

This routine PIREP from a Flight Design CTLS aircraft reported moderate turbulence from the surface to 11,500 ft at 0925 MST while enroute from Tucson, Arizona, to KAEG.

KAEG UA /OV KAEG/TM 2018/FL100/TP BE40/TB LT OCNL MOD/RM W/I 10 MLS
KAEG 100 TO SFC=

This routine PIREP from a Beech 400 Beechjet aircraft reported light to occasional moderate turbulence from 10,000 ft to the surface within 10 miles of KAEG at 1318 MST.

8.0 SIGMET and CWSU Advisories

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

No CWSU Center Weather Advisories or Meteorological Impact Statements were valid for the accident site at the accident time.

¹⁰ The WSR-88D is an S-band 10-centimeter wavelength radar with a power output of 750,000 watts, and with a 28-foot parabolic antenna that concentrates the energy between a 0.87° and 0.96° beam width. The radar produces three basic types of products: base reflectivity, base radial velocity, and base spectral width.

¹¹ Only pilot reports with the WMO header UBNM** identifier were considered.

¹² Flight Level – A Flight Level (FL) is a standard nominal altitude of an aircraft, in hundreds of ft. This altitude is calculated from the International standard pressure datum of 1013.25 hPa (29.92 inHg), the average sea-level pressure, and therefore is not necessarily the same as the aircraft's true altitude either above mean sea level or above ground level.

9.0 AIRMETs

There was an Airmen's Meteorological Information (AIRMET) Tango that was valid for the accident site at the accident time. This AIRMET Tango warned of moderate turbulence below FL180 and the potential for LLWS:

```
AIRMET TURB...WY NV UT CO AZ NM
FROM 80SW BIL TO 20S CZI TO 60SW RAP TO 30W SNY TO 20E TBE TO
60SSE TBE TO INK TO ELP TO 70S TUS TO 40E PHX TO EED TO 60NE LAS
TO 30SSE DTA TO 80SW BIL
MOD TURB BLW FL180. CONDS CONTG BYD 21Z THRU 03Z.
.
LLWS POTENTIAL...CO NM
BOUNDED BY 50SSW CYS-50W LBL-40SE TBE-40NE TCC-50SW FTI-
40SSE RSK-40NNE RSK-40SW CHE-50SSW CYS
LLWS EXP. CONDS ENDG 15-18Z.
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10.0 Terminal Aerodrome Forecast

The KLVS Terminal Aerodrome Forecast (TAF) valid at the time of the accident was issued at 1025 MST and was valid for a 24-hour period beginning at 1100 MST. The TAF for KLVS was as follows:

```
KLVS 051725Z 0518/0618 25027G38KT P6SM BKN200
FM060200 23012KT P6SM BKN200
FM061500 25018G28KT P6SM SCT150 SCT200=
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The 1025 MST forecast expected after 1100 MST, a wind from 250° at 27 knots with gusts to 38 knots, greater than 6 statute miles visibility, and a broken ceiling at 20,000 ft agl.

11.0 NWS Area Forecast Discussion

The NWS Office in Albuquerque, New Mexico, issued the following Area Forecast Discussion (AFD) at 1022 MST (closest AFD to the accident time). The aviation section of the AFD discussed the west winds over the mountains and eastern slopes with gusts to around 40 knots:

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Area Forecast Discussion...UPDATED
National Weather Service Albuquerque NM
1022 AM MST Sun Nov 5 2017
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.AVIATION...

18Z TAF CYCLE

Zonal flow aloft with sfc low over ne/east central NM. West winds over the higher terrain and along the east slopes of the central mt chain gusting to around 40kt. Sfc wind shift may work into the KCAO area aft 19Z but will be reinforced aft 06/01Z and may push as far west and south to KTCC with potential for MVFR cigs to develop. Lcl MVFR cigs may also redevelop aft 06/01Z along the west slopes of higher terrain over wrn and central NM due to a moist layer in the wly flow at mt top levels. A few showers could result from this flow over the northwest mts.

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.PREV DISCUSSION...323 AM MST Sun Nov 5 2017...

.SYNOPSIS...

Breezy to windy conditions are expected over west central areas, and from the northern and central mountains eastward, again today. The strongest gusts should briefly reach 50 mph over the Sangre de Cristo Mountains and from Clines Corners to around Las Vegas. Despite more sunshine high temperatures this afternoon will generally cool some from Saturday's readings, but near record high temperatures will again be possible along and east of a line from Ruidoso to Tucumcari. Also, there will be some rain and snow showers in the northwest mountains near the Colorado border today and tonight. Precipitation chances will increase and spread to more of New Mexico Tuesday and Tuesday night as an upper level trough passes southeastward over northern and eastern parts of the state. A cold front will also cause temperatures to fall Tuesday and Wednesday. A few to several inches of snow will be possible in the northern mountains with lighter amounts across the northeast plains. After some lingering snow across northeast areas Wednesday morning, warmer and drier conditions are expected during the latter half of the work week.

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.DISCUSSION...

A long wave trough over western Canada and the NW US will continue to steer some channeled vorticity mainly over Colorado and the northern fringe of New Mexico through today and tonight triggering the aforementioned showers mainly in the northwest mountains near the Colorado border. The system will also steer a modest and broad speed maximum aloft over northern and central parts of the forecast area this afternoon through tonight. In addition to the higher peaks of the Sangre de Cristos, a lee trough should help some of the strongest winds favor the east central and northeast highlands where a few gusts to 50 mph are expected.

Next week's storm system is forecast to begin producing showers over northwest areas as early as Monday. The system doesn't look particularly cold with 700 mb temperatures only dropping to around -4C along the Colorado border, but that should be cold enough for some snow accumulation in the northern mountains with lighter amounts possible across lower elevations of the northeast. Some fairly persistent easterly upslope flow is expected to develop east of the Sangre de Cristo Mountains with the arrival of a back door cold front Tuesday, then it will linger through Wednesday morning. Showers will probably fall mainly as rain elsewhere across the forecast area. After temperatures around 8 to 16 degrees below normal across parts of the east on Tuesday and Wednesday, readings will rebound areawide as a ridge of high pressure crosses Wednesday night and Thursday.

Winds will become gusty again Friday and temperatures will continue to warm as an upper level trough passes north of NM Friday and Friday night. Cooler air will then funnel into the state from the north on Saturday in the wake of the exiting system.

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.FIRE WEATHER...

A big high pressure area centered over Mexico and a trough crashing into the Pacific Northwest will produce nearly zonal flow across NM the next couple of days. Pretty good wind speeds aloft, between 60 and 75 knots over northern NM at 500mb. This will translate into breezy to windy conditions for the mountains and eastern portions of the state today and Monday. Not much precipitation is expected during this time, just a few rain and high elevation snow showers over the northern mountains. Light snow accumulations are possible on the higher peaks. Temperatures will remain above normal both days. No ventilation concerns with good to excellent rates.

The northwest U.S. trough will weaken as it drops southeast toward NM Tuesday, then it will cross the state later Tuesday night into Wednesday. Meanwhile a back door cold front will reach northeast NM later Monday night, then slowly move south and west Tuesday and Tuesday night. It's looking less likely the front will make it through the central mountain chain canyons and passes into the Rio Grande Valley. Pacific moisture will also arrive Tuesday. It will combine with the upper trough and surface cold front to provide sufficient instability, lift and moisture to produce fairly widespread precipitation across our CWA Tuesday into Wednesday. Amounts though will be mostly light. Accumulating snow will be confined to the northern mountains and northeast highlands with several inches possible above 8500 or 9000 feet. Temperatures will drop sharply in the east Tuesday and lower more on Wednesday, well below normal in all the east by Wednesday. Correspondingly, humidities will rise sharply. Vent rates will turn poor in the northeast Tuesday, then many areas on Wednesday, with only central portions seeing fair to very good rates Wednesday.

The end of the week through next weekend should be dry with zonal flow returning. Temperatures will rise with everyone above normal by Friday. A cold front will lower temperatures some next weekend, mainly in the east. Fair to poor vent rates will continue to plague some areas, especially the northwest and northeast.

CHJ

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.ABQ WATCHES/WARNINGS/ADVISORIES...

None.

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12.0 NWS Hazardous Weather Outlook

The NWS Office in Albuquerque, New Mexico, issued the following Hazardous Weather Outlook (HWO) at 0343 MST. The HWO indicated that west to southwest winds would affect the Sangre de Cristo mountains, as well as the east and northeast highlands with occasional wind gusts to 50 mph:

Hazardous Weather Outlook

National Weather Service Albuquerque NM

343 AM MST Sun Nov 5 2017

NMZ501>540-061200-

Northwest Plateau-Chuska Mountains-Far Northwest Highlands-

Northwest Highlands-West Central Plateau-West Central Mountains-

West Central Highlands-Southwest Mountains-

San Francisco River Valley-San Juan Mountains-Jemez Mountains-

West Slopes Sangre de Cristo Mountains-

Northern Sangre de Cristos above 9500 feet/Red River-

Southern Sangre de Cristos above 9500 feet-

East Slopes Sangre de Cristo Mountains-Upper Rio Grande Valley-

Lower Chama River Valley-Santa Fe Metro Area-

Middle Rio Grande Valley/Albuquerque Metro Area-

Lower Rio Grande Valley-Sandia/Manzano Mountains-Estancia Valley-

Central Highlands-South Central Highlands-Upper Tularosa Valley-

South Central Mountains-Raton Ridge/Johnson Mesa-

Far Northeast Highlands-Northeast Highlands-Union County-

Harding County-Eastern San Miguel County-Guadalupe County-

Quay County-Curry County-Roosevelt County-De Baca County-

Chaves County Plains-Eastern Lincoln County-Southwest Chaves County-

343 AM MST Sun Nov 5 2017

This hazardous weather outlook is for portions of north and central New Mexico.

.DAY ONE...Today and Tonight

Breezy to windy conditions are expected across northeast, east central and west central areas again today. The strongest southwest winds are expected over the Sangre de Cristo Mountains, as well as the east central and northeast highlands, where gusts should occasionally reach 50 mph.

.DAYS TWO THROUGH SEVEN...Monday through Saturday

The potential exists for a few to several inches of snow accumulation in the northern mountains Tuesday, Tuesday night and Wednesday morning as an upper level trough clips northeast areas with a cold front. An inch or two of snow will also be possible across the far northeast highlands and northeast plains Tuesday night and Wednesday morning. The heavier snow amounts should occur near the Colorado border.

.SPOTTER INFORMATION STATEMENT...

Spotter activation is not anticipated.

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13.0 Winds and Temperature Aloft Forecast

The NWS 0702 MST Winds and Temperature Aloft forecast valid for the accident flight are included below:

```
FBUS31 KWN0 051402
FD1US1
- DATA BASED ON 051200Z
VALID 051800Z   FOR USE 1400-2100Z. TEMPS NEG ABV 24000

FT  3000    6000    9000   12000   18000   24000   30000   34000   39000
ABQ                2719+04 2739+01 2670-11 2684-23 760238 760245 750355
```

The closest forecast point was Albuquerque, New Mexico, (ABQ). The 0702 MST ABQ forecast indicated a west wind at 9,000 ft from 270° at 19 knots with a temperature of 4° C and a west wind at 12,000 ft from 270° at 39 knots with a temperature of 1° C.

14.0 Pilot Weather Briefing and Information

The accident pilot did not receive an official weather briefing from Leidos and Direct User Access Terminal Service (DUATS). The pilot reported receiving weather information directly from KLV¹³ while on a left downwind for runway 20. While on the left downwind the pilot stated that the wind direction received from KLV¹⁴ was reported from 220°¹⁴ and by the time the pilot was down to 200 ft agl the pilot stated the wind direction received from KLV¹⁵ was from 230°. However, by 50 ft agl the pilot stated the wind direction had turned and was from 260° to 270°. It is unknown if the accident pilot checked or received any more weather information before or during the accident flight.

¹³ The pilot reported receiving the weather information directly from the ASOS equipment. There are two possibilities: either the one-minute observations or the METAR/SPECI. This is set on a site-by-site basis, can be changed at any time and can be changed by someone signed on as either an Air Traffic Controller or a Technician. Also, whichever type of observation being broadcast over the ground-to-air radio will be the same one that is played on the dial-up voice recording. After the accident, when using the dial-up voice recording at KLV, the 1-minute ASOS observations were heard. The 1-minute ASOS observations were not able to be retrieved for this investigation.

¹⁴ Wind direction was magnetic.

¹⁵ Wind direction was magnetic.

¹⁶ Wind direction was magnetic.

¹⁷ For more information please see the docket for this accident.

15.0 Astronomical Data

The astronomical data obtained from the United States Naval Observatory for the accident site on November 5, 107, indicated the following:

SUN

Begin civil twilight	0600 MST
Sunrise	0627 MST
Sun transit	1144 MST
Sunset	1702 MST
End civil twilight	1728 MST

E. LIST OF ATTACHMENTS

None.

Submitted by:

Paul Suffern
Senior Meteorologist

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