



National Transportation Safety Board

**Office of Aviation Safety
Washington, D.C. 20594-2000**

June 15, 2012

**WEATHER STUDY
CEN12LA345**

A. Accident

Location: Aspen, Colorado
Date: June 7, 2012
Time: 1224 mountain daylight time (1824 UTC¹)
Aircraft: Learjet 60, registration: N500SW

B. Meteorological Specialist

Mike Richards
Senior Meteorologist
National Transportation Safety Board
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Washington, DC 20594-2000

C. Details of the Investigation

The National Transportation Safety Board's (NTSB) meteorological specialist was not on scene and gathered weather data for this investigation from the NTSB headquarters in Washington D.C. office from official National Oceanic and Atmospheric Administration (NOAA)'s National Weather Service (NWS) sources including the National Climatic Data Center, except where noted. All times are in mountain daylight time (MDT) on June 7, 2012 - based upon the 24-hour clock. Directions are referenced to true north and distances in nautical miles. Heights are above mean sea level (msl) unless otherwise noted. Distances along the surface of the earth are calculated using the "Great Circle" formula.

Coordinates used for the accident locations: 39.22316° North latitude, 106.86886° West longitude at an elevation of approximately 7,820 feet. The accident occurred at Aspen-Pitkin County Airport/Sardy Field (KASE).

¹ UTC – abbreviation for Coordinated Universal Time

1. Surface

The NWS Surface Analysis Chart for 1200 MDT (figure 1) depicted a stationary front stretching from northern Arizona through the accident area into North Dakota, with a low-pressure center in the area of the accident site. Station models near the accident site depicted the wind as variable in direction, while farther east of the stationary boundary the wind was generally from the south and southeast. Temperatures in the western half of Colorado ranged from 65° Fahrenheit (F) to 80°F.

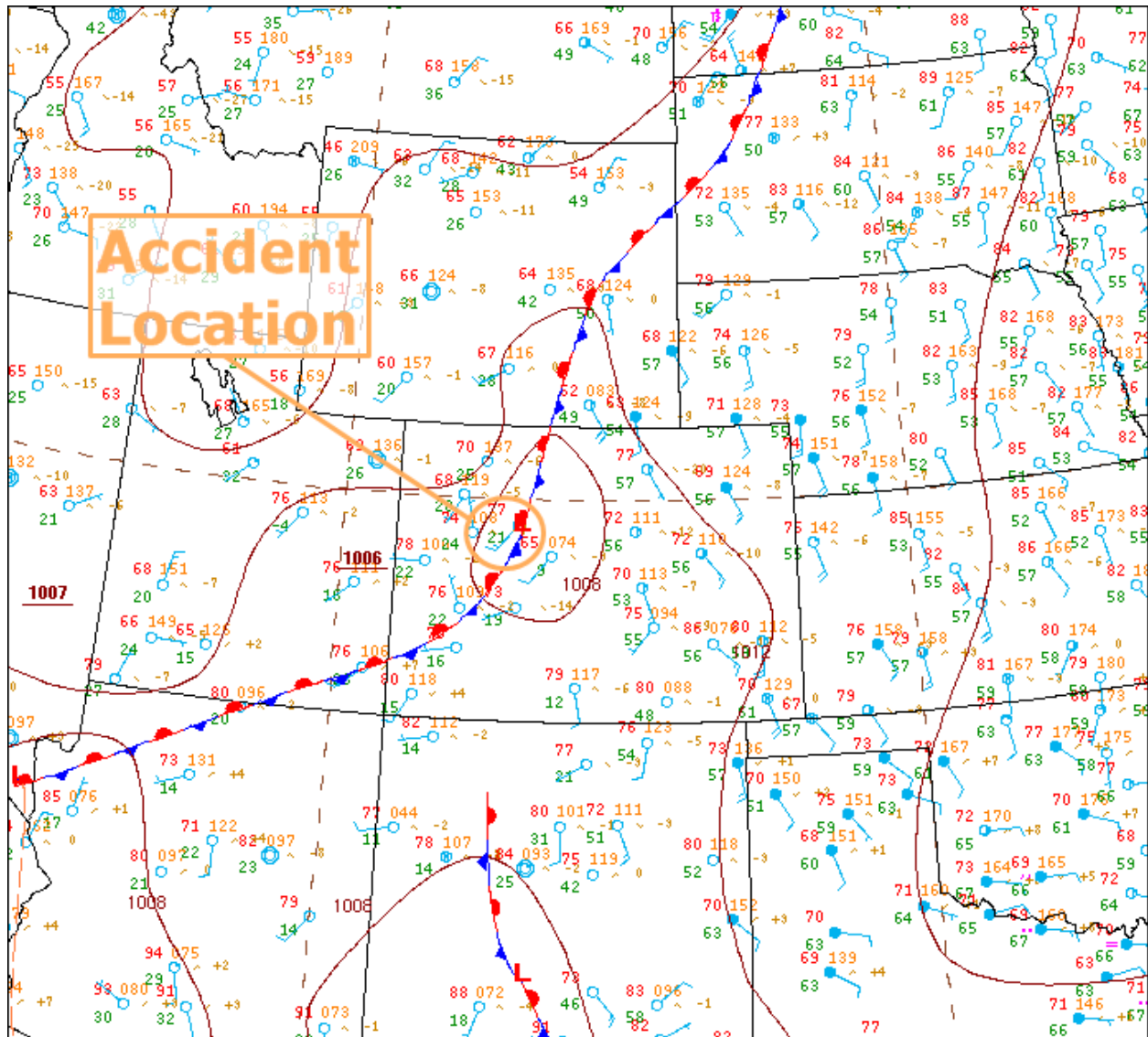


Figure 1 – NWS surface analysis at 1200 MDT.

Hourly surface observations from KASE from around the time of the accident are presented here:

[0953 MDT] METAR KASE 071553Z 04004KT 10SM CLR 18/M02 A3013 RMK AO2
SLP081 T01831022

[1053 MDT] METAR KASE 071653Z 01008KT 10SM CLR 22/M05 A3013 RMK AO2
SLP079 T02171050

**[1153 MDT] METAR KASE 071753Z 02007G16KT 350V060 10SM CLR 23/M06
A3013 RMK AO2 SLP078 T02331056 10233 20044 50000**

[1224 MDT] (time of accident)

[1253 MDT] METAR KASE 071853Z 22010G18KT 180V250 10SM CLR 24/M09
A3013 RMK AO2 SLP080 T02441094

At 1153 MDT, KASE reported wind from 020° at 7 knots with gusts to 16 knots, wind direction variable between 350° and 060°, visibility of 10 miles or greater, sky clear, temperature 23° Celsius (C), dew point temperature -6°C, altimeter setting 30.13 inches of Mercury. Remarks: station with a precipitation discriminator, sea-level pressure of 1007.8 hectopascals (hPa), hourly temperature of 23.3°C and hourly dew point temperature of -5.6°C, maximum temperature of 23.3°C during the previous six hours, minimum temperature of 4.4°C during the previous six hours, no change in pressure during the previous three hours.

Five-minute observations from the KASE Automated Surface Observing System (ASOS) were retrieved for the times surrounding the accident:

[1210 MDT] 5-MIN KASE 071810Z 36007KT 10SM CLR 23/M07 A3013 7630 13
10200 350/07 RMK AO2

[1215 MDT] 5-MIN KASE 071815Z 04008KT 350V060 10SM CLR 24/M07 A3013
7630 12 10400 030/08 340V050 RMK AO2

[1220 MDT] 5-MIN KASE 071820Z 26007KT 220V310 10SM CLR 24/M09 A3013
7630 10 10400 260/07 210V300 RMK AO2

[1224 MDT] (time of accident)

**[1225 MDT] 5-MIN KASE 071825Z 27012G18KT 240V300 10SM CLR 24/M10
A3013 7630 09 10400 260/12G18 230V290 RMK AO2**

[1230 MDT] 5-MIN KASE 071830Z 25011G18KT 10SM CLR 24/M10 A3013 7630 09
10400 240/11G18 RMK AO2

At 1225 MDT, the KASE five-minute observation indicated: wind from 270° at 12 knots with gusts to 18 knots, wind direction variable between 240° and 300°, visibility of 10 miles or greater, sky clear, temperature 24°C, dew point temperature -10°C, altimeter setting 30.13 inches of Mercury, station pressure would be observed at 7,630 feet on the standard atmosphere, relative humidity of 9 percent, density altitude of 10,400 feet, *magnetic wind* from 260° at 12 knots with gusts to 18 knots, *magnetic wind* variable between 230° and 290°. Remarks: station with a precipitation discriminator.

One-minute observations were retrieved from the KASE ASOS and the portion of this dataset that provides wind information is presented below. Two-minute averaged wind directions and magnitudes are in **blue**, and peak five-second average wind directions and magnitudes are in **red**.

[1200 MDT]	1800	0.050 D	349°	10	338°	14
[1201 MDT]	1801	0.050 D	347°	10	337°	11
[1202 MDT]	1802	0.058 D	341°	8	341°	9
[1203 MDT]	1803	0.050 D	344°	6	343°	7
[1204 MDT]	1804	0.050 D	346°	6	331°	8
[1205 MDT]	1805	0.050 D	359°	7	353°	9
[1206 MDT]	1806	0.050 D	002°	7	004°	8
[1207 MDT]	1807	0.050 D	356°	7	355°	9
[1208 MDT]	1808	0.050 D	003°	7	354°	8
[1209 MDT]	1809	0.050 D	004°	6	004°	10
[1210 MDT]	1810	0.050 D	357°	7	343°	10
[1211 MDT]	1811	0.050 D	359°	9	023°	12
[1212 MDT]	1812	0.050 D	005°	9	003°	13
[1213 MDT]	1813	0.050 D	016°	9	032°	12
[1214 MDT]	1814	0.050 D	039°	9	056°	13
[1215 MDT]	1815	0.050 D	036°	8	355°	13
[1216 MDT]	1816	0.050 D	353°	8	334°	13
[1217 MDT]	1817	0.050 D	323°	9	008°	10
[1218 MDT]	1818	0.050 D	333°	9	351°	11
[1219 MDT]	1819	0.050 D	310°	7	283°	9
[1220 MDT]	1820	0.050 D	264°	7	271°	10
[1221 MDT]	1821	0.050 D	253°	9	245°	16
[1222 MDT]	1822	0.050 D	251°	11	245°	16
[1223 MDT]	1823	0.050 D	251°	10	246°	11
[1224 MDT]	1824	0.050 D	269°	9	272°	18
[1225 MDT]	1825	0.132 D	271°	12	261°	18
[1226 MDT]	1826	0.071 D	247°	13	240°	17
[1227 MDT]	1827	0.050 D	238°	12	225°	18
[1228 MDT]	1828	0.050 D	242°	12	251°	16
[1229 MDT]	1829	0.050 D	249°	13	247°	17
[1230 MDT]	1830	0.050 D	249°	11	240°	17

At 1214 MDT, the KASE one-minute observation indicated: a two-minute averaged wind from 039° at 9 knots with a peak five-second averaged wind from 056° at 13 knots.

At 1218 MDT, the KASE one-minute observation indicated: a two-minute averaged wind from 333° at 9 knots with a peak five-second averaged wind from 351° at 11 knots.

At 1224 MDT, the KASE one-minute observation indicated: a two-minute averaged wind from 269° at 9 knots with a peak five-second averaged wind from 272° at 18 knots.

2. Pilot Reports

There were no pilot reports made below 10,000 feet within 100 miles of KASE within about 2.5 hours of the accident time.

3. Satellite Data

Geostationary satellite data were retained from an archive at the Space Science Engineering Center at the University of Wisconsin-Madison. Geostationary Operational Environmental Satellite (GOES)-15 “visible” (0.65 μ m) imagery from 1230 MDT is presented in figure 2. The satellite imagery indicated that generally clear conditions prevailed over the accident region shortly after the accident time.

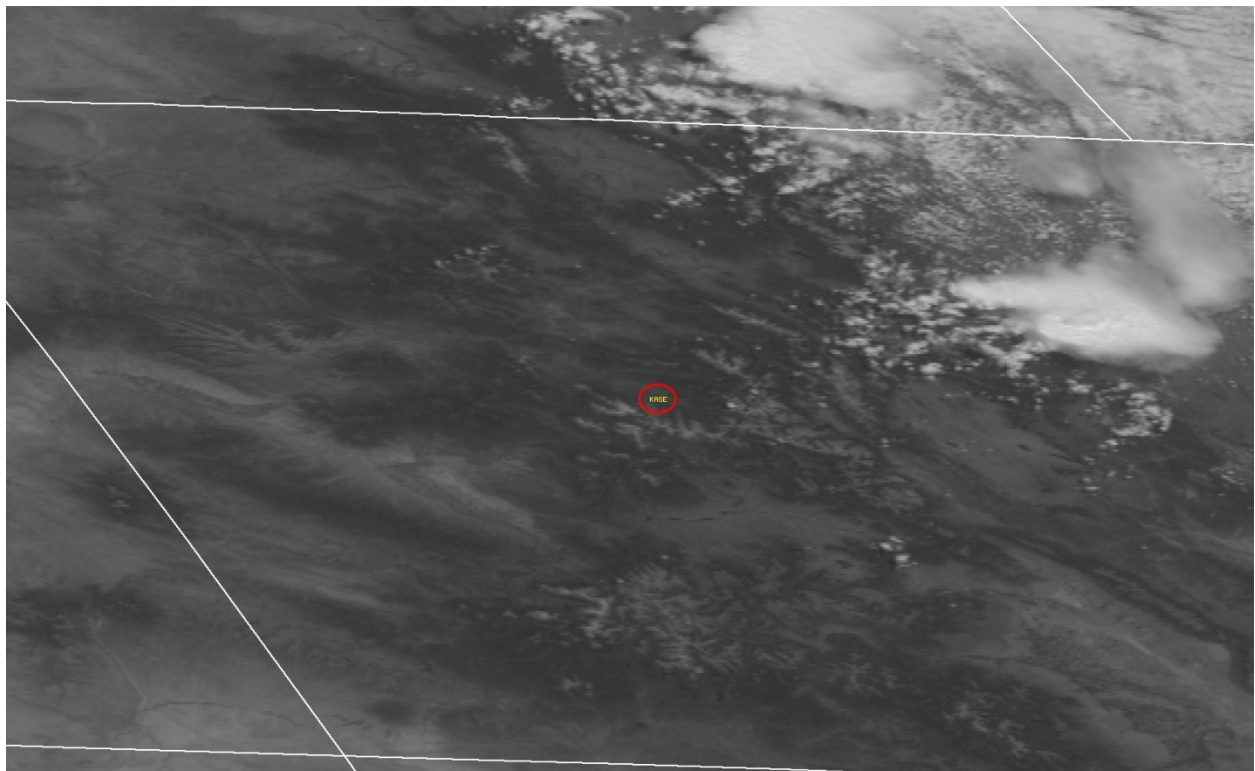


Figure 2 – GOES-15 0.65 μ m imagery from 1230 MDT. KASE circled in red. Image not corrected for parallax.

4. Weather radar

Regional WSR-88d data indicated there were no pertinent echoes near KASE surrounding the time of the accident.

5. Terminal Area Forecasts

Several Terminal Area Forecasts (TAFs) were issued for KASE in the hour prior to the accident.

KASE 071731Z 0718/0818 **VRB06KT P6SM FEW110 SCT250**
FM071900 32010G18KT P6SM FEW110 SCT250
FM080200 21008KT P6SM SCT200
FM081300 VRB05KT P6SM SCT250
FM081700 34008G15KT P6SM FEW100 SCT250=

A TAF issued at 1131 MDT for KASE forecasted for the accident time: a variable wind at 6 knots, visibility greater than 6 miles, few clouds at 11,000 agl, scattered clouds at 25,000 feet agl.

KASE 071816Z 0718/0818 **35010G18KT P6SM FEW110 SCT250**
FM080200 21008KT P6SM SCT200
FM081300 VRB05KT P6SM SCT250
FM081700 34008G15KT P6SM FEW100 SCT250=

A TAF issued at 1216 MDT for KASE forecasted for the accident time: wind from 350° at 10 knots with gusts to 18 knots, visibility greater than 6 miles, few clouds at 11,000 agl, scattered clouds at 25,000 feet agl.

6. AIRMETs

There were no Airmen's Meteorological Information (AIRMET) advisories active for the accident location below FL240 at the accident time.

7. SIGMETs

No Significant Meteorological Information (SIGMET) advisories were in effect for the accident location at the accident time.

8. Center Weather Advisories/Meteorological Impact Statements

No Center Weather Advisories or Meteorological Impact Statements were in effect for the accident location at the accident time.

9. Area Forecast

An Area Forecast for Colorado was issued at 0445 MDT that forecasted for the mountains west of the continental divide after 1200 MDT: scattered clouds at 14,000 feet with scattered cirrus above.

FAUS45 KPCI 071045

FA5W

_SLCC FA 071045

SYNOPSIS AND VFR CLDS/WX

SYNOPSIS VALID UNTIL 080500

CLDS/WX VALID UNTIL 072300...OTLK VALID 072300-080500

ID MT WY NV UT CO AZ NM

.

SEE AIRMET SIERRA FOR IFR CONDS AND MTN OBSCN.

TS IMPLY SEV OR GTR TURB SEV ICE LLWS AND IFR CONDS.

NON MSL HGTS DENOTED BY AGL OR CIG.

.

SYNOPSIS...ALF...11Z TROF FM LOW W CNTRL ALTA ACRS NW MT-SE ID-SE UT. 05Z LARGE LOW NR N50W132. TROF SW SASK-NERN MT-CNTRL SD. WK TROF S CA-INTL WTRS OFF NRN BAJA CA CST. ...SFC... 11Z STNR FNT S NV-XTRM NW AZ THRU LOW SE UT CONTG ACRS NW CO-E CNTRL WY THRU LOW NW SD CONTG NNEW. LOWS SW AZ...SE CO AND FAR W TX. HIGHS SW MT AND SRN SASK. 05Z CDFNT S CNTRL BC-NERN WA-N CNTRL OR. OCFNT W CNTRL ALTA-XTRM SW ALTA. CDFNT XTRM SW ALTA-NW MT-CNTRL ID-SE OR-XTRM NERN CA-S PTN NRN CA CSTL WTRS CONTG SWWD. WRMFNT XTRM SW ALTA-CNTRL MT-SE MT. STNR FNT SW UT THRU LOW SE UT CONTG ACRS NW CO-NERN WY CONTG NEWD AS CDFNT. LOWS 30SW SW EED...NERN NV...SE CO AND FAR W TX. HIGH CNTRL CO.

.

CO

PLAINS...OVC060 LYRD FL250. VIS 3-5SM BR. TIL 13Z ISOL -TSRA. CB

TOP FL450. 16Z SCT080 BKN100. WDLY SCT -TSRA DVLPG 18-20Z. TS

POSS SEV. OTLK...VFR TSRA.

SAN LUIS VLY-MTNS W OF CONTDVD...SKC OR SCT CI. 18Z SCT140 WITH SCT CI ABV. OTLK...VFR.

FOOTHILLS-RMNDR MTNS E OF CONTDVD...OVC070 LYRD FL250. VIS 3-5SM BR. 16Z SCT150 WITH SCT CI ABV. BECMG 1820 SCT100 BKN150.

WDLY SCT -TSRA POSS SEV. CB TOP FL450. OTLK...VFR TSRA.