NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

January 15, 2013

WEATHER STUDY

WPR13FA076

A. ACCIDENT

Location:	Lakeside, California
Date:	December 29, 2012
Time:	About 1014 Pacific standard time (1814 UTC[1])
Airplane:	Lancair IV; registration N5M

B. METEOROLOGY SPECIALIST

Donald E. Eick
Senior Meteorologist
National Transportation Safety Board
Operational Factors Division, AS-30
Washington, D.C. 20594-2000

C. SUMMARY

On December 29, 2012, at about 1014 Pacific standard time, a McKenzie, Lancair IV-P turbine, N5M, was substantially damaged following impact with terrain near Lakeside, California. The private pilot and his two passengers were fatally injured. The pilot/owner was operating the airplane under the provisions of 14 Code of Federal Regulations Part 91. Instrument meteorological conditions prevailed for the personal cross-country flight, which had originated from Montgomery Field, San Diego, California, approximately 9 minutes before the accident. A flight plan had not been filed.

The pilot was receiving flight following from an Air Traffic Controller for his flight to Phoenix Deer Valley Airport, Phoenix, Arizona. Wittiness reported seeing the airplane coming out of the clouds rotating until it impacted the ground. There was no postimpact fire.

D. DETAILS OF THE INVESTIGATION

The National Transportation Safety Board's (NTSB) 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 National Climatic Data Center (NCDC). All times are Pacific standard time (PST) based upon the 24 hour clock, local time is +8 hours to 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 airport and station identifiers use standard International Civil Aviation Organization (ICAO) 4 letter station identifiers versus International Air Transport Association (IATA) 3-letter identifiers, both codes are intermittently used in this report.

[1] UTC – is an abbreviation for Coordinated Universal Time.

The accident site was located at latitude 32.9148° N and longitude 116.9663° W at 1,065 feet.

E. 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 (NCEP) located in Camp Springs, 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 00-45.

1.1 Surface Analysis Chart

The NWS southwest regional Surface Analysis Chart for 1000 PST on December 29, 2012 is included as figure 1 with the approximate accident site within the red circle. The chart depicted an occluded front off the California coast with a low pressure system of 1016-hectopascals (hPa) at the triple point where the front split into a warm front extending southeastward across southern California in the vicinity of the accident site and a cold front to the south. A high pressure system was located to the northeast over the Utah and Colorado border at 1035-hPa.

The station models surrounding the accident site indicated a general southerly wind flow at less than 10 knots, multiple layers of clouds, and temperatures in the mid 50's degrees Fahrenheit (F) in the vicinity of San Diego to the 40's over south-central California immediately northeast of the accident site.

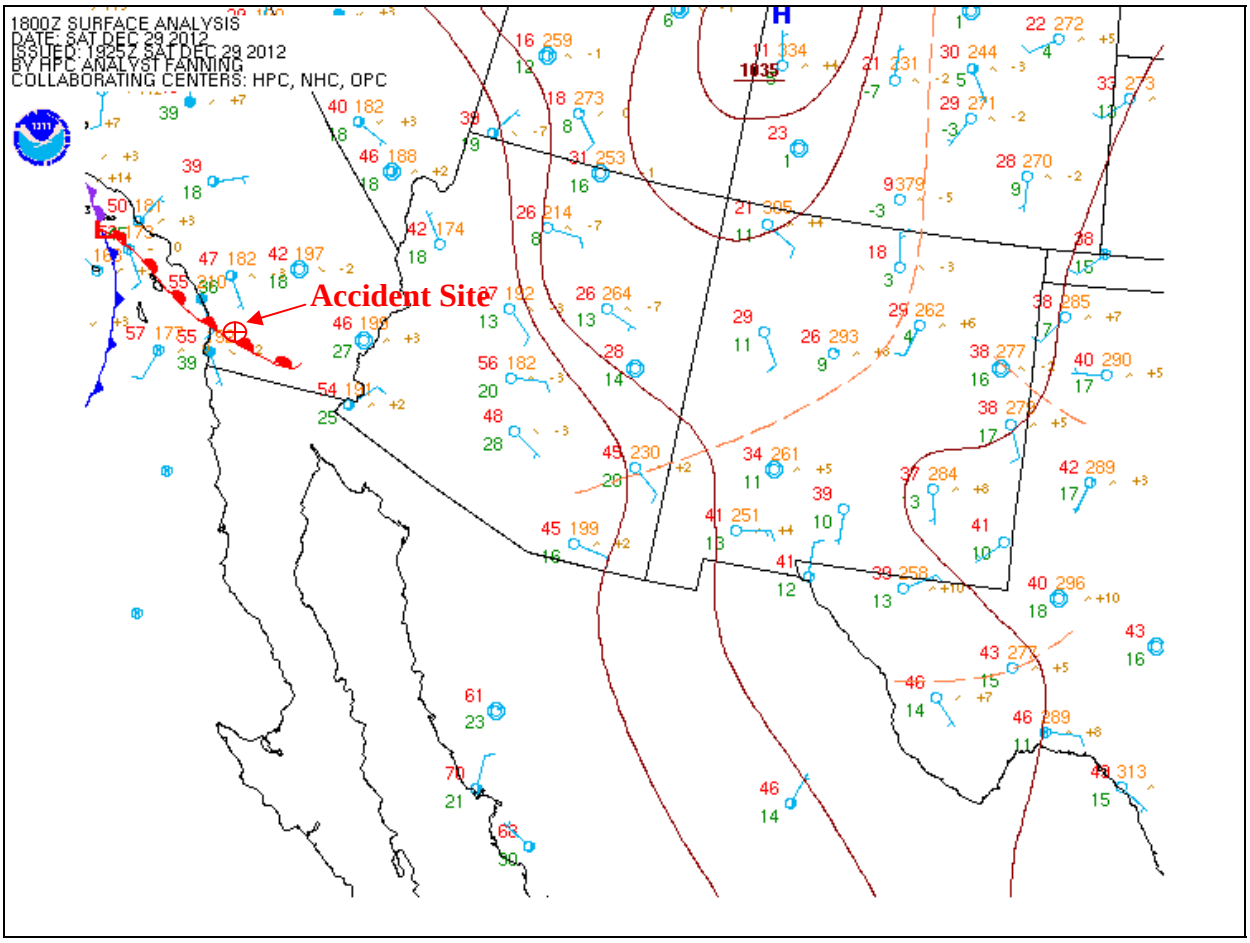

Figure 1- NWS southwest regional Surface Analysis Chart for 1000 PST

1.2 Weather Radar Mosaic

The NWS regional radar mosaic for 0959 PST (1759Z) on December 29, 2012 is included as figure 2. The mosaic depicted a band of echoes associated with rain showers over the Los Angeles area extending southwestward into the Pacific Ocean. No significant meteorological echoes were depicted in the San Diego area during the period.

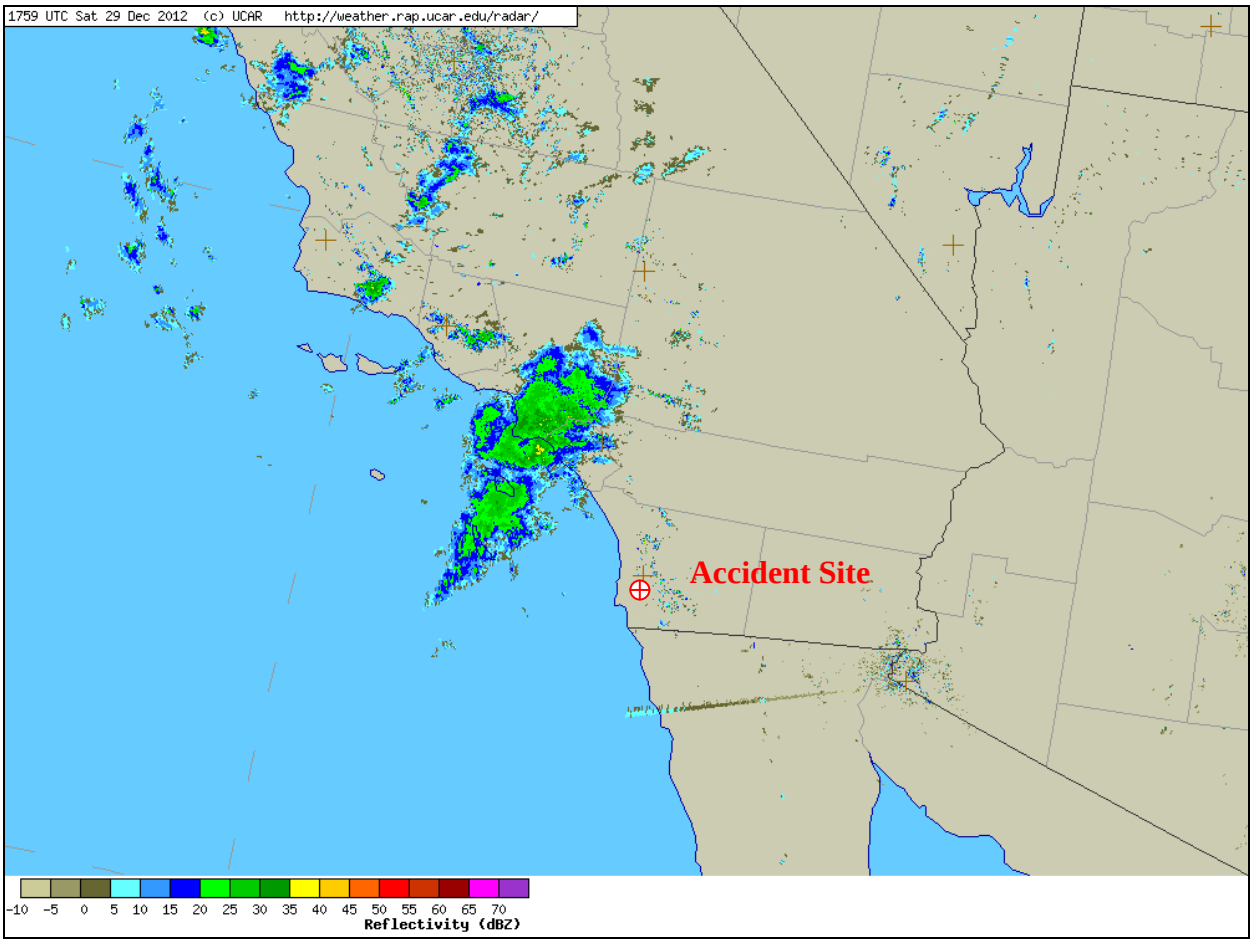

Figure 2- NWS Regional Radar Mosaic for 0959 PST

2.0 Surface Observations

The surrounding area was documented utilizing official NWS Meteorological Aerodrome (METAR) and special reports (SPECI) surrounding the area. Cloud heights are reporting above ground level (agl) in the following section.

2.1 Montgomery Field Airport (KMYF), San Diego

The accident airplane departed from Montgomery Field Airport (KMYF), San Diego runway 28R at 1005 PST. The airport had an Automated Surface Observation System (ASOS) installed and was augmented by a NWS certified observer. The airport listed an elevation of 427 feet msl and a magnetic variation of 14º E. The following conditions were reported at the time of the accident:

Montgomery Field weather at 0953 PST (1753Z), wind from 130° at 6 knots, visibility 10 miles, ceiling overcast at 5,500 feet agl, temperature 12° Celsius (C), dew point temperature 4° C, altimeter 30.08 inches of mercury (Hg). Remarks: automated observation system, sea level

pressure 1018.6-hPa, temperature 12.2º C, dew point 4.4º C, 6-hour maximum temperature 12.2º C, 6-hour minimum temperature 6.1º C, 3-hour pressure tendency fallen 0.2-hPa.

Based on the 0953 PST observation a departure from runway 28R would have resulted in a crosswind of 2 knots and a tailwind component of 6 knots.

The raw observations surrounding the period were as follows:

METAR KMYF 291753Z 13006KT 10SM OVC055 12/04 A3008 RMK AO2 SLP186 T01220044 10122 20061 58002=

Departure 1805Z
Accident 1814Z

METAR KMYF 291853Z 15005KT 10SM FEW060 13/06 A3005 RMK AO2 SLP174 T01330061=

METAR KMYF 291953Z VRB06KT 10SM SCT032 BKN060 14/06 A3002 RMK AO2 SLP164 T01440056=

2.2 Miramar Marine Corps Air Station (KNKX), San Diego

The accident airplane flew over the Miramar Marine Corps Air Station (KNKX) on his climb out after departure KMYF. The airport had an elevation of 477 feet and reported the following conditions:

METAR KNKX 291755Z 13005KT 10SM BKN035 BKN200 13/04 A3007 RMK AO2 SLP181 T01330044 10133 20061 58003

Accident 1814Z

METAR KNKX 291855Z VRB06KT 10SM SCT035 SCT050 BKN200 15/05 A3004 RMK AO2 SLP171 T01500050

METAR KNKX 291855Z VRB06KT 10SM SCT035 SCT050 BKN200 15/05 A3004 RMK AO2 SLP171 T01500050

2.3 San Diego International Airport (KSAN), San Diego

San Diego International Airport (KSAN) was located approximately 6 miles southwest of the departure airport of KMYF at an elevation of approximately 17 feet. The airport had an augmented ASOS and reported the following conditions surrounding the period:

METAR KSAN 291751Z 14006KT 10SM FEW035 OVC060 13/04 A3010 RMK AO2 SLP192 T01280039 10128 20089 56002

Accident 1814Z

METAR KSAN 291851Z 17007KT 10SM FEW035 SCT060 SCT200 14/06 A3007 RMK AO2 SLP181 T01390061

METAR KSAN 291951Z 16008KT 10SM FEW035 BKN090 BKN200 15/06 A3004 RMK AO2 SLP173 T01500061

METAR KSAN 292051Z 18011KT 10SM BKN050 OVC060 14/07 A3002 RMK AO2 SLP163 T01440067 56029

2.4 Gillespie Field Airport (KSEE), San Diego/El Cajon

Gillespie Field Airport was located approximately 5 miles south of the accident site at an elevation of 388 feet. The airport had an Automated Weather Observation System (AWOS) installed and reported the following conditions surrounding the period:

METAR KSEE 291647Z 00000KT 15SM SCT030 BKN045 07/02 A3010

Accident 1814Z

METAR KSEE 291847Z 00000KT 15SM SCT036 BKN060 12/03 A3006

METAR KSEE 292047Z VRB06KT 20SM BKN050 BKN070 15/03 A3000

The observations indicated two layers of clouds multiple layer of clouds with bases at 3,600 feet and a ceiling broken at 6,000 feet.

2.5 Ramona Airport (KRNM), Ramona

Ramona Airport (KRNM) was located approximately 8 miles north of the accident site at an elevation of 1,395 feet. The airport had an ASOS and reported the following conditions:

METAR KRNM 291753Z 17006KT 10SM FEW022 BKN036 OVC049 10/05 A3007 RMK AO2 SLP185 T01000050 10106 21022 56003

KRNM 291753Z 17006KT 10SM FEW022 BKN036 OVC049 10/05 A3007 RMK AO2 SLP185 T01000050 10106 21022 56003

Accident 1814Z

METAR KRNM 291853Z 18004KT 10SM FEW023 SCT044 OVC055 11/05 A3004 RMK AO2 SLP172 T01110050

KRNM 291853Z 18004KT 10SM FEW023 SCT044 OVC055 11/05 A3004 RMK AO2 SLP172 T01110050

METAR KRNM 291953Z 18004KT 10SM SCT033 BKN047 BKN055 12/04 A3001 RMK AO2 SLP161 T01170039

At 0953 PST Ramona reported multiple layers of cloud with a few clouds at 2,200 feet, a ceiling broken at 3,600 feet, and overcast at 4,900 feet.

3.0 Upper Air Data

The closest upper air sounding or rawinsonde observation (RAOB) was from the Miramar Marine Air Station (KNKX), San Diego, site number 72293, located approximately 3 miles north of the departure airport. The 0400 PST (1200Z) upper air sounding was plotted on a standard Skew-T log P diagram[2] utilizing RAOB[3] software is included as figure 3 from the surface to 500-hPa or 18,000 feet.

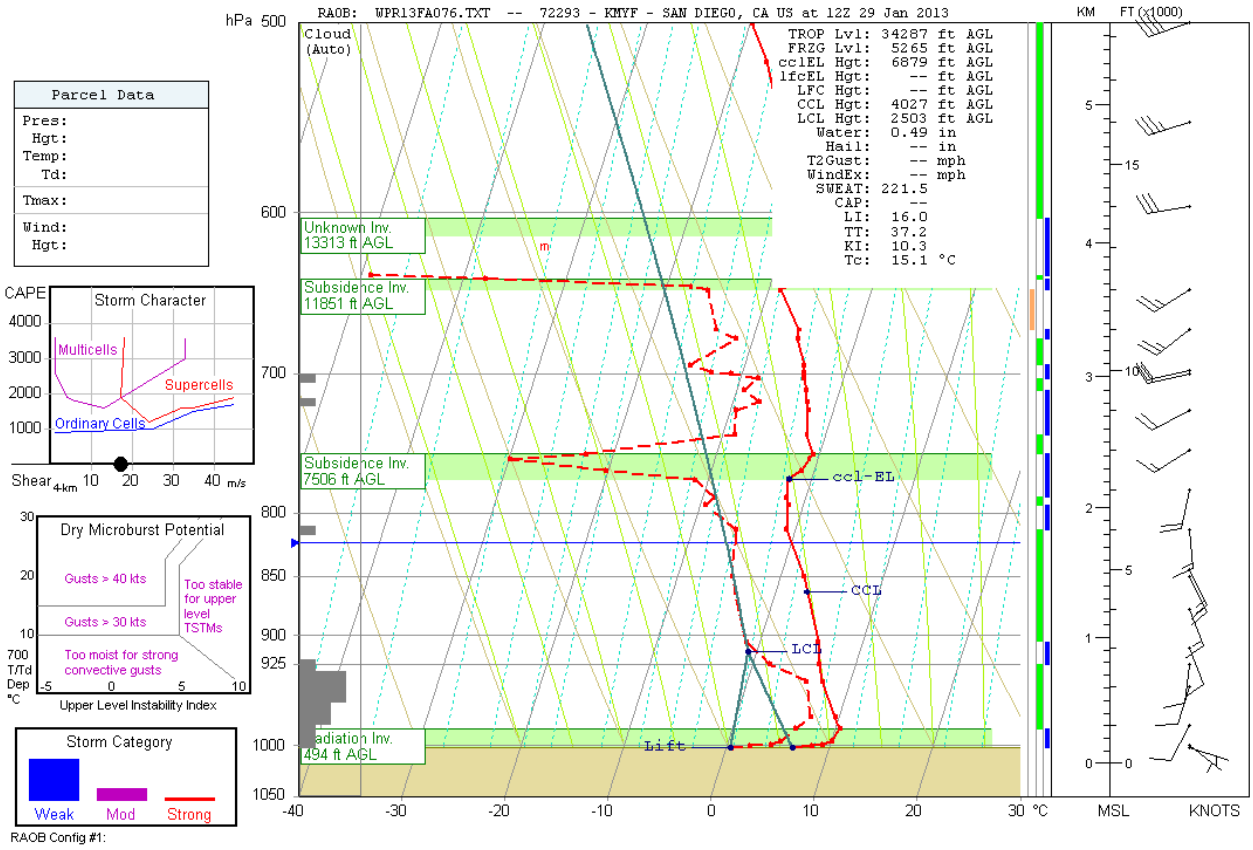

Figure 3 – Miramar/San Diego 0400 PST sounding

The sounding depicted a surface based temperature inversion to 494 feet with several shallow inversions noted at various levels below 18,000 feet. The lifted condensation level (LCL)[4] at approximately 2,500 feet agl, and a convective condensation level (CCL)[5] at approximately

[2] 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.

[3] RAOB – (The complete Rawinsonde Observation program) is an interactive sounding analysis program developed by Environmental Research Services, Matamopras, Pennsylvania.

[4] Lifting Condensation Level (LCL) - The height at which a parcel of moist air becomes saturated when it is lifted dry adiabatically.

[5] Convective Condensation Level (CCL) - The height to which a parcel of air, if heated sufficiently from below, will rise adiabatically until condensation starts. This is typically used to identify the base of cumuliform clouds, which

4,000 feet agl. The equilibrium level (EL)[6] or expected top of the clouds was at 7,300 feet, which also corresponded to the location of another temperature inversion. The freezing level was identified at approximately 5,672 feet. The sounding had a relative humidity greater than 75 percent between 900 and 2,150 feet and had a precipitable water value of 0.49 inches. The stability parameters indicated a Lifted Index (LI)[7] of 16.0 and indicated a stable atmosphere supporting stratiform type clouds.

The surface wind was from 110º at 4 knots at the time of the sounding with winds shifting to the south immediately above the surface based inversion through 7,000 feet and then veering to the west. The mean 0 to 6 kilometer wind was from 236° at 22 knots, with the level of maximum wind at 38,000 feet from 230° at 85 knots. The tropopause was identified at 34,694 feet.

4.0 Satellite Data

The Geostationary Operational Environmental Satellite number 15 (GOES-15) data was obtained and displayed on the National Transportation Safety Board's Man-computer Interactive Data Access System (McIDAS) workstation. Both the infrared long wave and visible band imagery were obtained surrounding the time of the accident. The infrared long wave imagery (band 4) at a wavelength of 10.7 microns (μm) provided standard satellite image with radiative cloud top temperatures with a resolution of 4 km. The visible imagery (band 1) at a wavelength of 0.65 μm provided a resolution of 1 km.

Figure 4 is the GOES-15 infrared image at 4X magnification with the NWS frontal systems overlaid and the accident site marked. The image depicts a band of broken to overcast clouds extending from the Pacific Coast to approximately 50 miles inland, and extends over the accident site. The radiative cloud top temperature over the region and the accident site ranged from 271º to 275º Kelvin or from -2.16º to 1.84º C, which corresponded to cloud tops from 7,000 to 5,000 feet based on the Miramar sounding. No cumulonimbus clouds or thunderstorms were indicated over the region at the time.

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are normally produced from surface heating and thermal convection.

[6] Equilibrium Level (EL) - On a sounding, the level above the level of free convection (LFC) at which the temperature of a rising air parcel again equals the temperature of the environment. The height of the EL is the height at which thunderstorm updrafts no longer accelerate upward. Thus, to a close approximation, it represents the height of expected (or ongoing) thunderstorm tops. However, strong updrafts will continue to rise past the EL before stopping, resulting in storm tops that are higher than the EL. This process sometimes can be seen visually as an overshooting tops or anvil dome. The EL typically is higher than the tropopause, and is a more accurate reference for storm tops.

[7] Lifted Index (LI) - A common measure of atmospheric instability. Its value is obtained by computing the temperature that air near the ground would have if it were lifted to 500-hPa or approximately 18,000 feet and comparing that temperature to the actual temperature at that level. Negative values indicate instability - the more negative, the more unstable the air is, and the stronger the updrafts are likely to be with any developing thunderstorms.

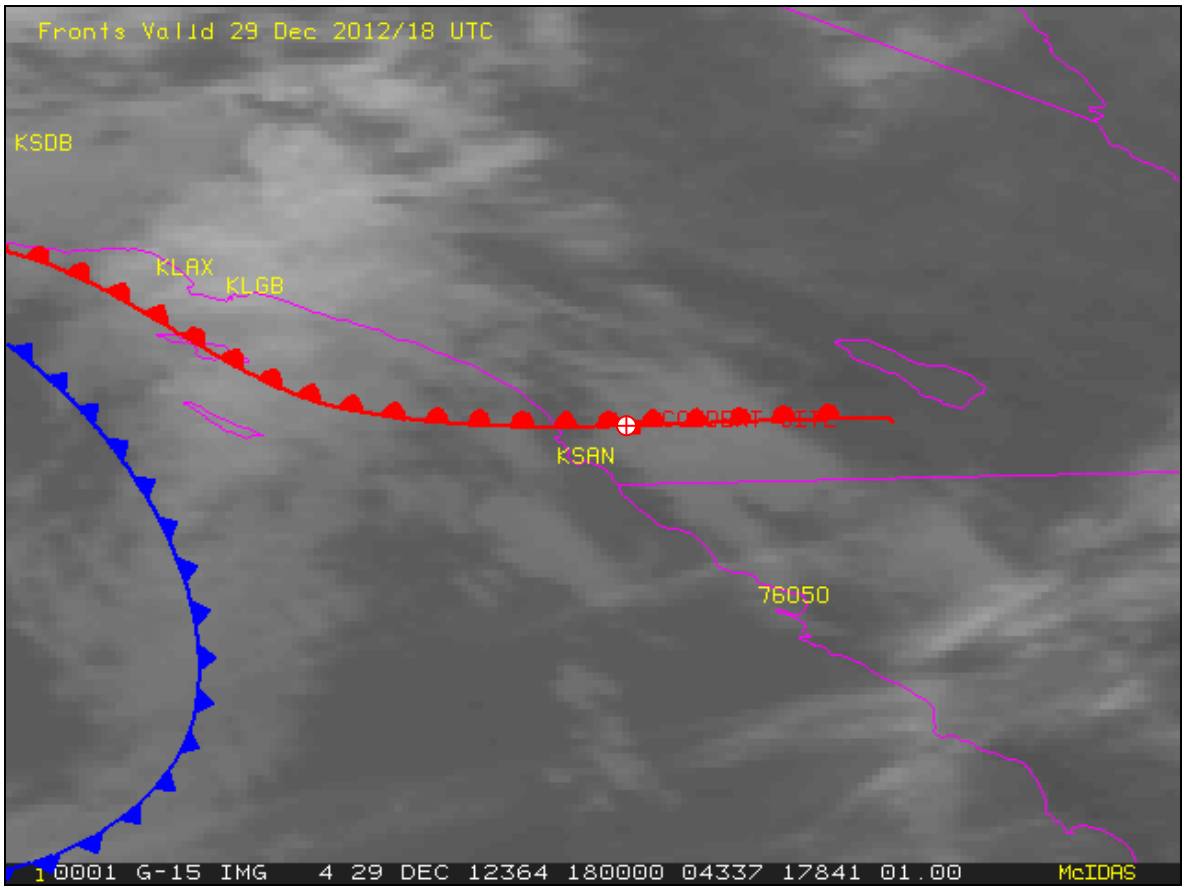

Figure 4 - GOES-15 infrared image at 1000 PST

Figures 5 and 6 are the GOES-15 visible image at 4X magnification for 1000 and 1030 PST respectively with the accident site marked. The image depicted an overcast layer of stratiform clouds extending over the route from the departure airport to the accident site. The clouds were observed moving eastward with the mean wind. Based on the image N5M was likely operating between the two layers of clouds attempting to find a hole in the climbs to climb above the cloud layer.

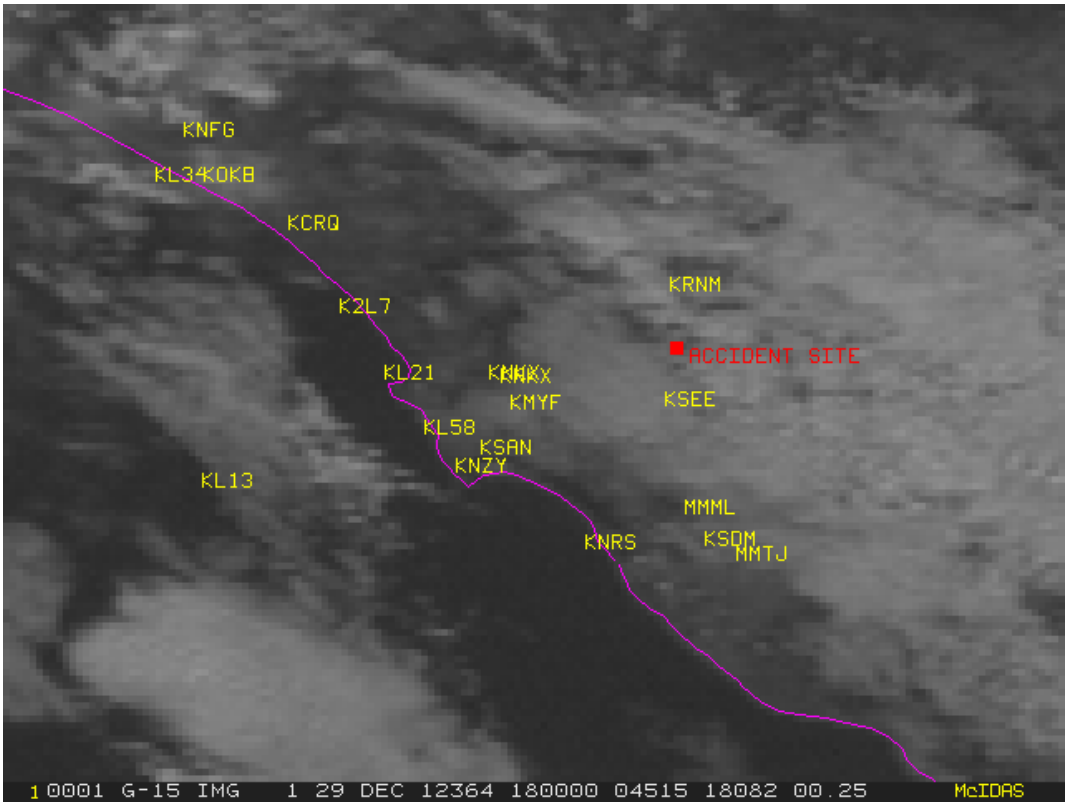

Figure 5 - GOES-15 visible image for 1000 PST

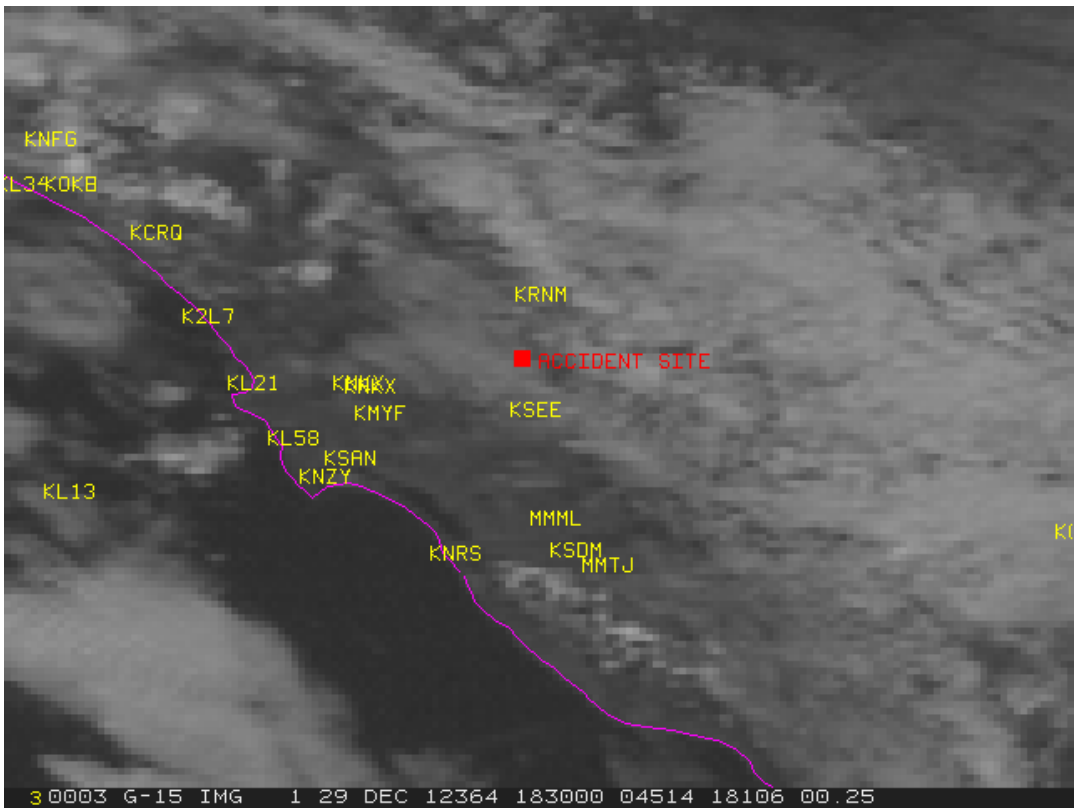

Figure 6- GOES-15 visible image at 1030 PST

5.0 Pilot Reports

The following pilot reports (PIREPs) were recorded over southern California surrounding the period between 0700 and 1230 PST:

NTD UA /OV FIM/TM 1513/FL100/TP C210/TA M09/IC MOD RIME/RM LGT-MOD RIME. ZLA AWC-WEB:KZLA=

LGB UA /OV SLI/TM 1530/FL130/TP CRJ9/TA M15/IC LGT CLR/RM ZLA AWC-WEB:KZLA=

LGB UA /OV LAX142020/TM 1530/FL130/TP A320/TA M04/IC LGT RIME 100-150/RM ZLA AWC-WEB:KZLA=

BUR UA /OV LAX041015/TM 1547/FL080/TP CRJ7/TA M18/IC LGT RIME/RM ZLA AWC-WEB:KZLA=

HHR UA /OV LAX060010/TM 1626/FL080/TP CRJ7/TA M10/IC MOD/RM ZLA AWC-WEB:KZLA=

AVX UA /OV SXC090008 /TM 1704 /FL060 /TP E120 /TA UNKN /IC LGT RIME 060-080=

AVX UA /OV SXC /TM 1705 /FL110 /TP BE20 /TA M06 /IC LGT RIME=

AVX UA /OV SXC090007 /TM 1710 /FL110 /TP BE20 /TA M04 /IC LGT RIME=

AVX UA /OV SXC/TM 1710/FL110/TP BE20/TA M04/IC LGT RIME/RM ZLA AWC-WEB:KZLA=

SDB UA /OV LHS320010/TM 1714/FL100/TP BE99/TA M09/IC LGT MX/RM ZLA AWC-WEB:KZLA=

SAN UA /OV OCN270017 /TM 1716 /FL080 /TP BE20 /TB MOD=

SAN UUA /OV OCN270019 /TM 1730 /FL022 /TP BE35 /WX WTSPT /RM WATERSPOUT=

CRQ UUA /OV KOKB270019/TM 1737/FL022/TP UNKN/TB MOD/RM WATERSPOUT REPORTED.K ZLA=

Accident 1814Z

LGB UA /OV TOA090006 /TM 1826 /FL030 /TP C182 /SK BKN-OVC030=

POC UA /OV POM/TM 1840/FL180/TP CRJ7/TB MOD 180-200/RM ZLA AWC-WEB:KZLA=

SNA UA /OV SLI165030/TM 1852/FL120/TP A320/TA M20/IC LGT RIME/RM ZLA AWC-WEB:KZLA=

SNA UA /OV SLI165030/TM 1852/FL120/TP A320/TA M20/IC LGT RIME/RM ZLA AWC-WEB:KZLA=

SNA UA /OV SLI150020/TM 1916/FL130/TP MD82/TA M01/IC LGT RIME/RM ZLA AWC-WEB:KZLA=

RIV UA /OV PDZ165020/TM 1921/FL120/TP B738/TA M14/IC MOD RIME 120-160/RM ZLA AWC-WEB:KZLA=

VCV UA /OV VCV360010 /TM 1930 /FL140 /TP C750 /TA M17 /IC MOD 140-120=

SNA UA /OV SNA180006 /TM 1936 /FL080 /TP SR22 /TA 00 /IC LGT RIME=

RIV UA /OV PDZ165020/TM 1921/FL120/TP B738/TA M14/IC MOD RIME 120-160/RM ZLA AWC-WEB:KZLA=

VCV UA /OV PMD095030/TM 1939/FL210/TP A320/TA M17/IC LGT RIME/RM ZLA AWC-WEB:KZLA=

LGB UA /OV LAX090015 /TM 2001 /FL100 /TP B762 /TA M10 /IC MOD RIME /RM NUMRS ACFT REPORT MOD RIME AT THIS ALT NEAR LAX=

SAN UA /OV OCN270014 /TM 1950 /FL100 /TP A320 /WX -RA /TB MOD=

PSP UA /OV PSP270015 /TM 2018 /FL100 /TP B737 /TA M11 /IC LGT RIME=

RIV UA /OV HDF180005 /TM 2028 /FL110 /TP SR22 /TA M07 /IC LGT RIME=

There were numerous reports of light to moderate icing reported; however, the accident airplane lost control before reaching the freezing level. There were also several reports near the time of the accident of moderate turbulence between 8,000 and 10,000 feet.

6.0 Area Forecast

The Area Forecast (FA) is a forecast of visual Flight Rules (VFR) clouds and weather conditions over an area as large as the size of several states. It must be used in conjunction with the AIRMET Sierra (IFR) bulletin for the same area in order to get a complete picture of the weather. The area forecast together with the AIRMET Sierra bulletin are used to determine forecast enroute weather and to interpolate conditions at airports which do not have a terminal forecast (TAF) issued. The NWS Aviation Weather Center (AWC) located in Kansas City, Missouri, issues the FA at regular intervals and issues specials reports as necessary usually in the form of an AIRMET. The San Francisco (KSFO) regional forecast that was current at the time of the accident was issued at 0345 PST and valid through 1800 PST on December 29, 2012. The forecast was as follows:

FAUS46 KKCI 291145 2012364 1131
FA6W
-SFOC FA 291145
SYNOPSIS AND VFR CLDS/WX
SYNOPSIS VALID UNTIL 300600
CLDS/WX VALID UNTIL 300000...OTLK VALID 300000-300600
WA OR CA AND CSTL WTRS
.
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...LOW N CNTRL CA WITH TROF INTO SWRN AZ. 06Z TROF NWRN MT INTO SRN CA CSTL WTRS. SFC...LOW SFO BAY AREA WITH CDFNT INTO SWRN CA CSTL WTRS. TROF ALG WA AND OR CST. 06Z LOW NR RZS WITH CDFNT INTO SERN CA CSTL WTRS. TROF ALONG WA AND NRN OR CST.
.
CNTRL CA
CSTL SXNS
SFO BAY AREA...OVC030 TOP 160. SCT -SHRA. 15Z OVC040. ISOL -SHRA. 18Z SCT030. OTLK...VFR.
RMNDR CSTLN...OVC020 TOP 160. SCT -SHRA. 17Z OVC040. ISOL -SHRA. 22Z OVC030. WDLY SCT -SHRA. OTLK...MVFR CIG SHRA.
INLAND...OVC040 TOP 160. WDLY SCT -SHRA. 15Z OVC040. ISOL -SHRA. OTLK...VFR.

SAN JOAQUIN VLY
NRN...OVC090 TOP 160. WDLY SCT -SHRA. 15Z OVC040. ISOL -SHRA. OTLK...VFR.
SRN...SKC. 15Z OVC040 TOP 160. ISOL -SHRA. 23Z OVC080. OTLK...VFR.
SRN SIERNEV...SCT150 BKN CI. 15Z OVC120 TOP FL200. ISOL -SHRA. OTLK...VFR.
.
SRN CA..VBG-NID-60NNW BIH LN SWD
CSTL SXNS
CSTLN LAX NWD...OVC080 TOP FL200. ISOL -SHRA. 15Z OVC040. SCT -SHRA. 20Z OVC030. VIS 3-5SM -RA BR. OTLK...MVFR CIG RA BR.
CSTLN S OF LAX...SCT040 BKN CI. 15Z OVC040 TOP FL200. 21Z OVC030. ISOL -SHRA. OTLK...VFR BECMG 01Z MVFR CIG RA.
INLAND...BKN150 TOP FL200. 15Z OVC100. 20Z OVC050. ISOL -SHRA. OTLK...VFR BECMG 01Z MVFR CIG SHRA.
INTR MTNS/DESERTS...SCT-BKN CI. OTLK...VFR.
.

The forecast for the departure area was for overcast clouds at 4,000 feet with tops to 20,000 feet with clouds bases becoming higher and broken in coverage inland.

7.0 In-Flight Weather Advisories

The NWS issues in-flight weather advisories designated as Severe Weather Forecast Alerts (AWW's), Convective SIGMET's (WST's), SIGMET's (WS's), Center Weather Advisories (CWA's), and AIRMET's (WA's). In-flight 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.

AIRMETs

WAUS46 KKCI 291445 *2012364 1440*
WA6S
-SFOS WA 291445
AIRMET SIERRA UPDT 2 FOR IFR AND MTN OBSCN VALID UNTIL 292100
.
AIRMET IFR...OR CA
FROM 30ENE ONP TO 60E DSD TO 70SSE LKV TO 40NNW RBL TO 60WNW OED TO 30SW EUG TO 30ENE ONP
CIG BLW 010/VIS BLW 3SM PCPN/BR/FG. CONDS ENDG 18-21Z.
.
AIRMET IFR...WA OR ID MT
FROM 30SW YXC TO 20NNE MLP TO 40SE DNJ TO 20W BKE TO 20WNW YKM TO 20SE YDC TO 30SW YXC
CIG BLW 010/VIS BLW 3SM PCPN/BR/FG. CONDS CONTG BYD 21Z THRU 03Z.
.
AIRMET MTN OBSCN...WA OR CA ID MT NV
FROM 20N HUH TO 50WSW YXC TO 60WSW YQL TO 60SE FCA TO 30NW BOI TO 50SSW TWF TO 40SSE OAL TO 20S EHF TO 30SW RZS TO 20SSW ENI TO 20WNW TOU TO 20N HUH
MTNS OBSC BY CLDS/PCPN/BR. CONDS CONTG BYD 21Z THRU 03Z.

.
OTLK VALID 2100-0300Z
AREA 1...IFR WA OR ID MT NV
BOUNDED BY 30SW YXC-20E MLP-20NNW BKE-40SSW TWF-40SW REO-20ESE
PDX-20SSE YDC-30SW YXC
CIG BLW 010/VIS BLW 3SM PCPN/BR/FG. CONDS CONTG THRU 03Z.
.
AREA 2...MTN OBSCN WA OR CA ID MT NV UT
BOUNDED BY 60WSW YXC-60SSW YXH-DNJ-50SE BVL-20SSW ILC-20W BTY-
60WSW OAL-60SW OED-20SSW HQM-20WNW TOU-HUH-60WSW YXC
MTNS OBSC BY CLDS/PCPN/BR. CONDS CONTG THRU 03Z.
....
WAUS46 KKCI 291445 2012364 1433
WA6T
-SFOT WA 291445
AIRMET TANGO UPDT 2 FOR TURB VALID UNTIL 292100
.
AIRMET TURB...WA OR CA AND CSTL WTRS
FROM 70WSW YXC TO 20SW BKE TO SNS TO 130WSW SNS TO 140WSW FOT TO
120WNW ONP TO 150W TOU TO HUH TO 70WSW YXC
MOD TURB BTN FL180 AND FL410. CONDS CONTG BYD 21Z THRU 03Z.
.
OTLK VALID 2100-0300Z...TURB WA OR CA ID NV UT AZ AND CSTL WTRS
BOUNDED BY 50SW YXC-20ENE BAM-40NE HVE-20ESE BZA-30S MZB-160SW
SNS-140WSW FOT-20W ONP-30NNW TOU-50SW YXC
MOD TURB BTN FL180 AND FL410. CONDS CONTG THRU 03Z.
....
WAUS46 KKCI 291445 2012364 1440
WA6Z
-SFOZ WA 291445
AIRMET ZULU UPDT 2 FOR ICE AND FRZLVL VALID UNTIL 292100
.
AIRMET ICE...OR CA ID NV AND CSTL WTRS
FROM 60SSE BKE TO 50S TWF TO 60N LAS TO 40NW HEC TO 70SSW MZB TO
120SSW RZS TO 40SW ENI TO 80SSW ONP TO 60SSE BKE
MOD ICE BTN 050 AND 160. CONDS CONTG BYD 21Z THRU 03Z.
.
AIRMET ICE...WA
FROM 40SW YXC TO 20SW YKM TO PDX TO 20SW TOU TO 20WNW HUH TO 40SW YXC
MOD ICE BTN FRZLVL AND 140. FRZLVL SFC-030. CONDS DVLPG 15-18Z.
CONDS CONTG BYD 21Z THRU 03Z.
.
OTLK VALID 2100-0300Z...ICE WA OR ID MT
BOUNDED BY 30SSW YXC-30N HVR-30E TWF-BKE-40SSW LKV-30NNE
ONP-20WSW TOU-20WNW HUH-30SSW YXC
MOD ICE BTN FRZLVL AND 140. FRZLVL SFC-030. CONDS CONTG THRU 03Z.
.
FRZLVL...RANGING FROM SFC-060 ACRS AREA
SFC ALG 20NW HUH-40SE HUH-30SSW OED-60ENE FOT-70SSW BTY-50SSW
LAS-20S EED
040 ALG 150WNW FOT-130NW FOT-60SW FOT-40W ENI-30SSE ENI-30ESE
SAC
....

Update issued at 0829 PST:

WAUS46 KKCI 291629 AAA 2012364 1630
WA6S
-SFOS WA 291629 AMD
AIRMET SIERRA UPDT 3 FOR IFR AND MTN OBSCN VALID UNTIL 292100
.
AIRMET IFR...OR CA
FROM 30ENE ONP TO 60E DSD TO 70SSE LKV TO 40NNW RBL TO 60WNW OED TO 30SW EUG TO 30ENE ONP
CIG BLW 010/VIS BLW 3SM PCPN/BR/FG. CONDS ENDG 18-21Z.
.
AIRMET IFR...WA OR ID MT
FROM 30SW YXC TO 20NNE MLP TO 40SE DNJ TO 20W BKE TO 20WNW YKM TO 20SE YDC TO 30SW YXC
CIG BLW 010/VIS BLW 3SM PCPN/BR/FG. CONDS CONTG BYD 21Z THRU 03Z.
.
AIRMET MTN OBSCN...WA OR CA ID MT NV
FROM 20N HUH TO 50WSW YXC TO 60WSW YQL TO 60SE FCA TO 30NW BOI TO 50SSW TWF TO 40SSE OAL TO 20S EHF TO 30SW RZS TO 20SSW ENI TO 20WNW TOU TO 20N HUH
MTNS OBSC BY CLDS/PCPN/BR. CONDS CONTG BYD 21Z THRU 03Z.
.
AIRMET MTN OBSCN...CA...UPDT
FROM 20S EHF TO 40WNW TRM TO 40NW MZB TO 20SW RZS TO 20S EHF
MTNS OBSC BY CLDS/PCPN/BR. CONDS CONTG BYD 21Z THRU 03Z.
...NEW AIRMET...
.
OTLK VALID 2100-0300Z
AREA 1...IFR WA OR ID MT NV
BOUNDED BY 30SW YXC-20E MLP-20NNW BKE-40SSW TWF-40SW REO-20ESE PDX-20SSE YDC-30SW YXC
CIG BLW 010/VIS BLW 3SM PCPN/BR/FG. CONDS CONTG THRU 03Z.
.
AREA 2...MTN OBSCN WA OR CA ID MT NV UT
BOUNDED BY 60WSW YXC-60SSW YXH-DNJ-50SE BVL-20SSW ILC-20W BTY-60WSW OAL-60SW OED-20SSW HQM-20WNW TOU-HUH-60WSW YXC
MTNS OBSC BY CLDS/PCPN/BR. CONDS CONTG THRU 03Z.
....

The accident site was located within the boundary for the AIRMET for icing conditions in-clouds between 5,000 and 16,000 feet, and bordered immediately south of the AIRMET for mountain obscuration.

8.0 Astronomical Data

The United Stated Naval Observatory website provided the following astronomical data for San Diego:

SUN	
Beginning of civil twilight	0623 PST
Sunrise	0650 PST
Accident	1014 PST

Sun transit	1151 PST
Sunset	1652 PST
End of civil twilight	1719 PST

At the time of the accident the Sun was 29º above the horizon and at an azimuth of 153º.

Submitted by:

Donald Eick
NTSB Senior Meteorologist