



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

April 8, 2019

Weather Study

METEOROLOGY

WPR18LA241

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A. ACCIDENT

Location: Auburn, Wyoming
Date: August 13, 2018
Time: about 0908 mountain daylight time
1508 Universal Coordinated Time (UTC)
Airplane: Cessna 172N; Registration: N5660J

B. METEOROLOGIST

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C. SUMMARY

On August 13, 2018, about 0908 mountain daylight time, a Cessna 172N airplane, N5660J, sustained substantial damage after impacting terrain about 13 miles west of Auburn, Wyoming¹. The commercial pilot and the two passengers sustained serious injuries. The airplane was registered to Eagle Flight Services LLC., and operated by the pilot under the provisions of Title 14 *Code of Federal Regulations* Part 91 as an aerial observation flight. Visual meteorological conditions prevailed and a company flight plan was filed for the local flight. The flight departed Afton Municipal Airport (AFO) Afton, Wyoming, about 0850.

D. DETAILS OF THE INVESTIGATION

The National Transportation Safety Board's 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 Weather Prediction Center (WPC) and the National Center for Environmental Information (NCEI). All times are mountain daylight time (MDT) based upon the 24-hour clock, local time is -6 hours from UTC, and UTC=Z. NWS airport and 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. Directions are referenced to true north and distances in nautical miles. Heights are in feet (ft) above mean sea level (msl) unless otherwise noted. Visibility is in statute miles and fractions of statute miles.

The accident site is based on the reported coordinates of latitude 42.7700° N and longitude 111.3100° W at an elevation of approximately 6,750 ft.

¹ Actual accident site is located in Idaho, while nearest city is Auburn, WY.

E. WEATHER INFORMATION

1.0 Synoptic Conditions

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 College Park, 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 00-45H.

1.1 Surface Analysis Chart

The northcentral portion of the NWS Surface Analysis Chart for 0900 MDT is included as figure 1 with the approximate accident site location by a red star. The chart depicted a low-pressure system over southern Wyoming at 1011-hectopascals (hPa)² along a stationary front which extended westward over southern Wyoming into northern Utah and Nevada. A trough of low-pressure extended north-northwest from the low across Wyoming into Montana. Several high-pressure systems at 1025-hPa were located to the north over Alberta, Canada, with a ridge of high-pressure extending southward into eastern Wyoming, with another high at 1021-hPa over Colorado to the south. The accident site was located north of the stationary front on the cold air side of the front.

The station models surrounding the accident site indicated variable winds of 10 knots or less, clear to scattered clouds, with temperatures in the mid to high 60’s degrees Fahrenheit (F), with dew point temperatures in the 40’s (°F). Two stations in Idaho to the west and northwest of the accident site reported visibility obscured in smoke, and several other stations across central and northern Wyoming reported visibility restricted in haze.

² Hectopascals (hPa) is the new standard term for reporting sea-level pressure and is interchangeable with the former term millibar (mb) with the same units. Standard sea-level pressure is 1013.25-hPa at a temperature of 15° Celsius (C).

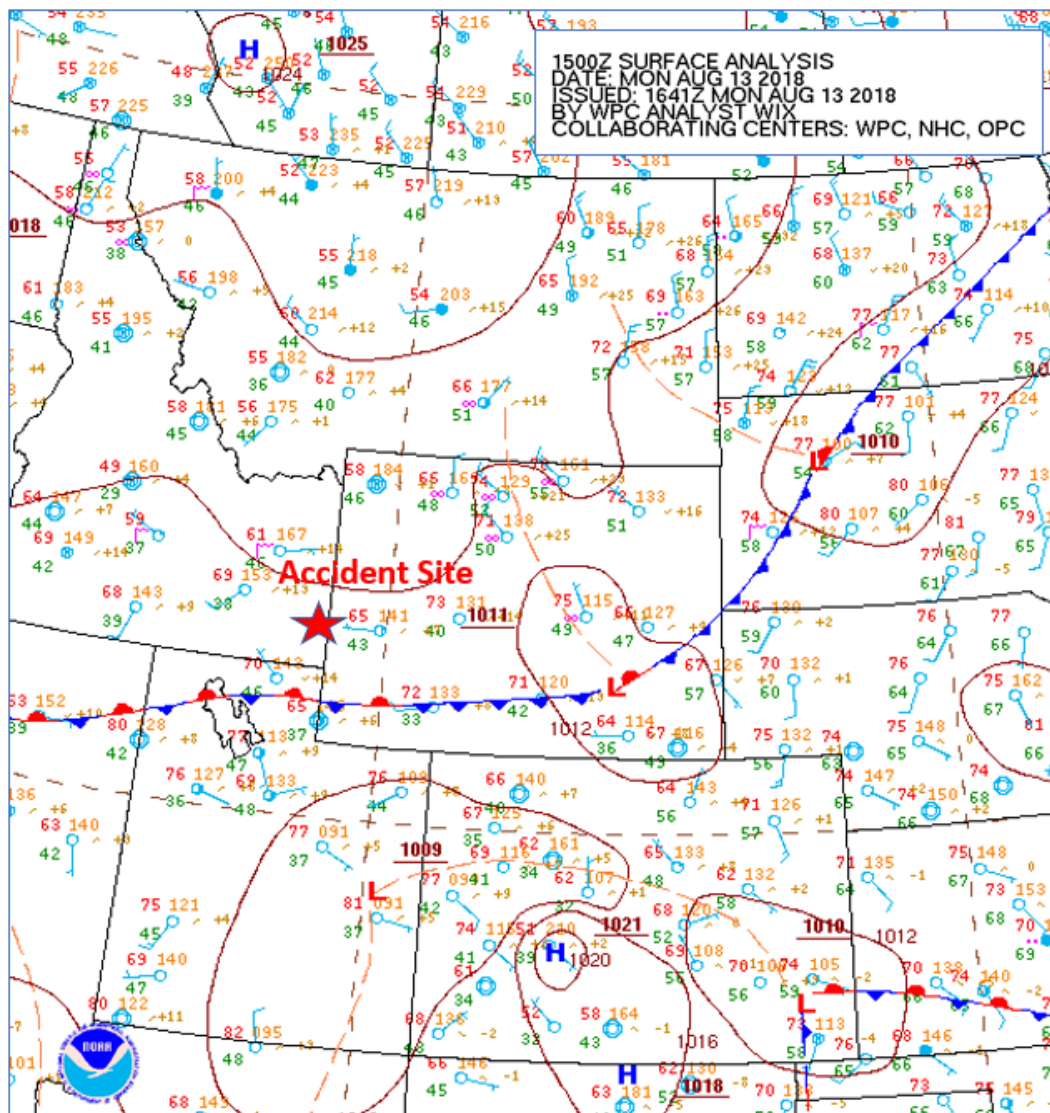


Figure 1 – northcentral section of the NWS Surface Analysis Chart for 0900 MDT

1.2 National Composite Radar Mosaic

The National Composite Radar Mosaic centered over the region is included as figure 2 for 0900 MDT with the approximate accident site and the departure airport marked. The image depicted a band of light intensity echoes near 30 dBZ oriented on a northeast-to-southwest immediately between the departure airport and the accident site.

The closest NWS weather surveillance radar will be further documented in section 5.0 of this report, for any potential impacts from these echoes.

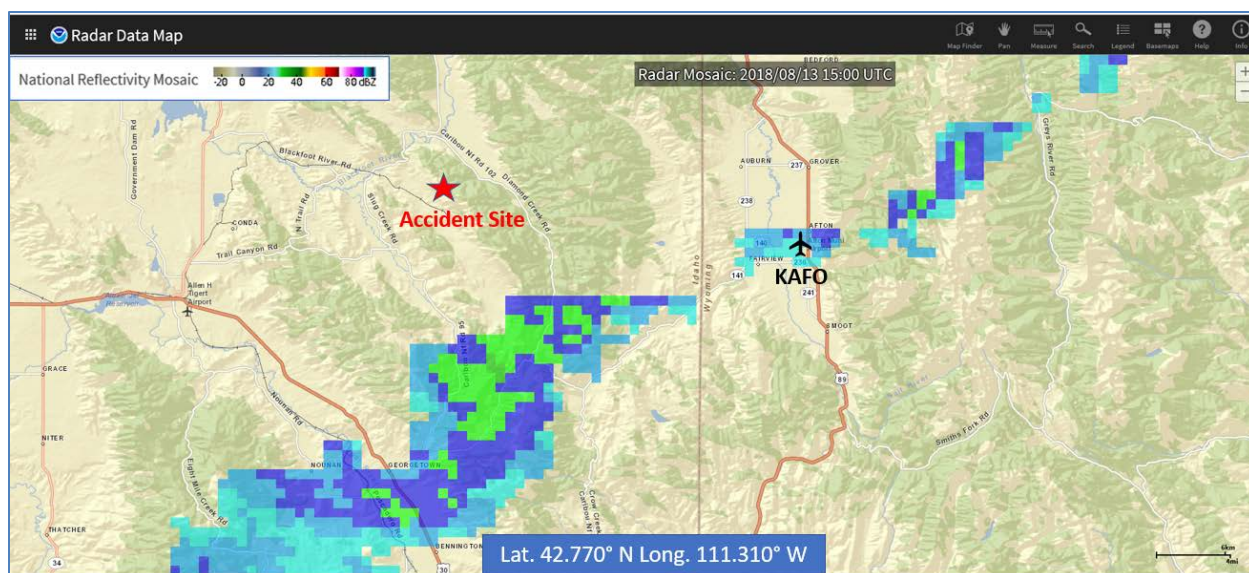


Figure 2 - National Composite radar Mosaic over the accident site at 0900 MDT

2.0 Observations

The surrounding area was documented using Meteorological Aerodrome Reports (METAR) and Specials observations (SPECI). The area had a magnetic variation of 12° East based on the sectional chart for the area. Cloud heights are reported in height above ground level (agl) in the following section.

2.1 Afton, Wyoming

The closest weather reporting facility to the accident site was from the departure airport of Afton Municipal Airport (KAFO), Afton, Wyoming, located 16.5 miles east from the accident site at an elevation of 6,221 ft. The airport had an Automated Weather Observation System (AWOS). The following conditions were reported at the approximate time of the accident:

KAFO weather observation at 0855 MDT, automated, wind from 310° at 5 knots, visibility 10 miles or more, ceiling overcast at 11,000 ft agl, temperature 12° Celsius (C), dew point temperature 6° C, altimeter 30.22 inches of mercury (Hg).

Based on the 0855 MDT observation of temperature, dew point, altimeter setting, elevation, and a relative humidity of 67%, the density altitude was calculated at 7,018 ft or approximately 800 ft higher than standard international atmosphere.

The raw observations in standard code and abbreviations surrounding the period of the accident were as follows:

METAR KAFO 131255Z AUTO 00000KT 10SM CLR 09/04 A3021 RMK AO2
 METAR KAFO 131315Z AUTO 00000KT 10SM CLR 08/05 A3022 RMK AO2
 METAR KAFO 131335Z AUTO 29004KT 10SM SCT120 08/06 A3023 RMK AO2
 METAR KAFO 131355Z AUTO 09006KT 10SM BKN120 11/05 A3022 RMK AO2

METAR KAFO 131415Z AUTO 33003KT 10SM BKN110 11/07 A3022 RMK AO2
METAR KAFO 131435Z AUTO 26003KT 10SM OVC110 13/05 A3022 RMK AO2
METAR KAFO 131455Z AUTO 31005KT 10SM OVC110 12/06 A3022 RMK AO2

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METAR KAFO 131515Z AUTO 05005KT 10SM BKN110 13/06 A3023 RMK AO2
METAR KAFO 131535Z AUTO 34004KT 10SM SCT120 16/05 A3022 RMK AO2
METAR KAFO 131555Z AUTO 35004KT 10SM SCT120 15/07 A3021 RMK AO2
METAR KAFO 131615Z AUTO 22004KT 10SM CLR 16/07 A3023 RMK AO2
METAR KAFO 131635Z AUTO 00000KT 10SM SCT120 17/08 A3022 RMK AO2
METAR KAFO 131655Z AUTO 26006KT 10SM SCT120 17/07 A3022 RMK AO2
METAR KAFO 131715Z AUTO 00000KT 10SM SCT120 18/05 A3023 RMK AO2

A review of the observations indicated that visual flight rule (VFR) conditions prevailed at KAFO surrounding the period with winds less than 10 knots, visibility unrestricted, and a single layer of mid-level clouds near 11,000 to 12,000 ft agl. There was no measurable precipitation recorded at the station during the period, even with observed weather echoes over the station.

2.2 Pocatello, Idaho

The next closest official weather reporting facility to the accident site was from Pocatello Regional Airport (KPIH), Pocatello, Idaho, located approximately 57 miles west of the accident site at an elevation of 4,452 ft. The airport had an Automated Surface Observation System (ASOS) installed and was augmented by Air Traffic Control (ATC) personnel.

KPIH weather observation at 0853 MDT, wind from 230° at 9 knots, visibility 10 miles or more, sky clear, temperature 21° C, dew point temperature 3° C, altimeter 30.12 inches of Hg. Remarks: automated observation system with a precipitation discriminator, sea level pressure 1015.3-hPa, temperature 20.6° C, dew point 3.3° C, 3-hour pressure tendency risen 1.3-hPa.

The raw observations in standard format and code surrounding the period were as follows:

METAR KPIH 131153Z 25004KT 10SM CLR 14/05 A3008 RMK AO2 SLP138 T01440050 10228 20139 53004 \$
METAR KPIH 131253Z 21006KT 10SM SCT100 15/03 A3010 RMK AO2 SLP147 T01500033 \$
METAR KPIH 131353Z COR 23007KT 10SM CLR 18/03 A3011 RMK AO2 SLP148 T01780028 \$
METAR KPIH 131453Z 23009KT 10SM CLR 21/03 A3012 RMK AO2 SLP153 T02060033 51013

Accident 1508Z

METAR KPIH 131553Z 23010KT 10SM CLR 23/04 A3012 RMK AO2 SLP154 T02280039
METAR KPIH 131653Z 25009KT 10SM CLR 24/03 A3012 RMK AO2 SLP153 T02440028
METAR KPIH 131753Z VRB06KT 10SM CLR 27/02 A3009 RMK AO2 SLP143 T02670022 10272 20139 58008

A review of the observations at KPIH surrounding the period indicated southwest winds less than 10 knots, visibility unrestricted, with a scattered layer of clouds at 10,000 ft agl being reported prior to the accident. No precipitation was recorded at the station during the period, and no augmented reports of any towering cumulus or cumulonimbus clouds associated with convection.

2.3 Big Piney, Wyoming

The next closest official weather reporting location was from Miley Memorial Field Airport (KBPI), Big Piney, Wyoming, located 38 miles east-southeast of KAFO and 55 miles from the

accident site at an elevation of 6,994 ft. The airport had an ASOS and reported the following conditions at the time of the accident:

KBPI weather at 0853 MDT, automated, wind from 270° at 5 knots, visibility 10 miles or more, scattered clouds at 11,000 ft agl, temperature 18° C, dew point temperature 6° C, altimeter 30.27 inches of Hg. Remarks: automated observation system with a precipitation discriminator, sea level pressure 1014.1-hPa, temperature 18.3° C, dew point 6.1° C, 3-hour pressure tendency risen 0.7-hPa.

The raw observations in standard code and abbreviation surrounding the period were as follows:

KBPI 131153Z AUTO 02010KT 10SM CLR 17/01 A3024 RMK AO2 SLP119 T01720006 10233 20133 58002
 KBPI 131253Z AUTO 34010KT 10SM CLR 13/01 A3025 RMK AO2 SLP130 T01330011
 KBPI 131353Z AUTO VRB03KT 10SM CLR 18/02 A3026 RMK AO2 SLP133 T01780022
 KBPI 131453Z AUTO 27005KT 10SM SCT110 18/06 A3027 RMK AO2 SLP141 T01830061 52007
 KBPI 131553Z AUTO 33007KT 10SM FEW120 22/03 A3026 RMK AO2 SLP135 T02170028
 KBPI 131653Z AUTO 24006KT 10SM SCT120 25/03 A3026 RMK AO2 SLP134 T02500033
 KBPI 131753Z AUTO 30007KT 10SM BKN110 27/00 A3027 RMK AO2 SLP136 T02670000 10267 20133 55000

The observations indicated that VFR conditions prevailed at KBPI during the period with variable winds of 10 knots or less.

3.0 Remote Weather Stations

Diamond Flat Remote Automated Weather Station (RAWS) located at latitude 42.866806° N, longitude 111.218861° W or 7 miles north-northeast of the accident site at an elevation of 7,582 ft. At 0908 MDT the station reported a temperature of 65° F, dew point 34° F, with a relative humidity of 32%, winds were from the NNE at 1 mph, with a peak gust of 8 mph.

Diamond Flat RAWS

<i>TIME</i>	<i>T(°F)</i>	<i>Td(°F)</i>	<i>RH(%)</i>	<i>WIND (MPH)</i>
0708 MDT	58	29	33	SSW 2 G 3
0808 MDT	61	32	34	CALM
0908 MDT	65	34	32	NNE 1 G 8
1008 MDT	72	36	27	SSW 1 G 8
1108 MDT	74	34	23	SW 1 G 5

4.0 Sounding

To determine the vertical structure and state of the atmosphere over the accident site a High-Resolution Rapid Refresh (HRRR)³ numerical model data was retrieved from the NOAA Air

³ The HRRR is a National Oceanic and Atmospheric Administration (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.

Resources Laboratory and plotted on a standard Skew T log P diagram⁴ using the complete Rawinsonde Observation RAOB program software⁵.

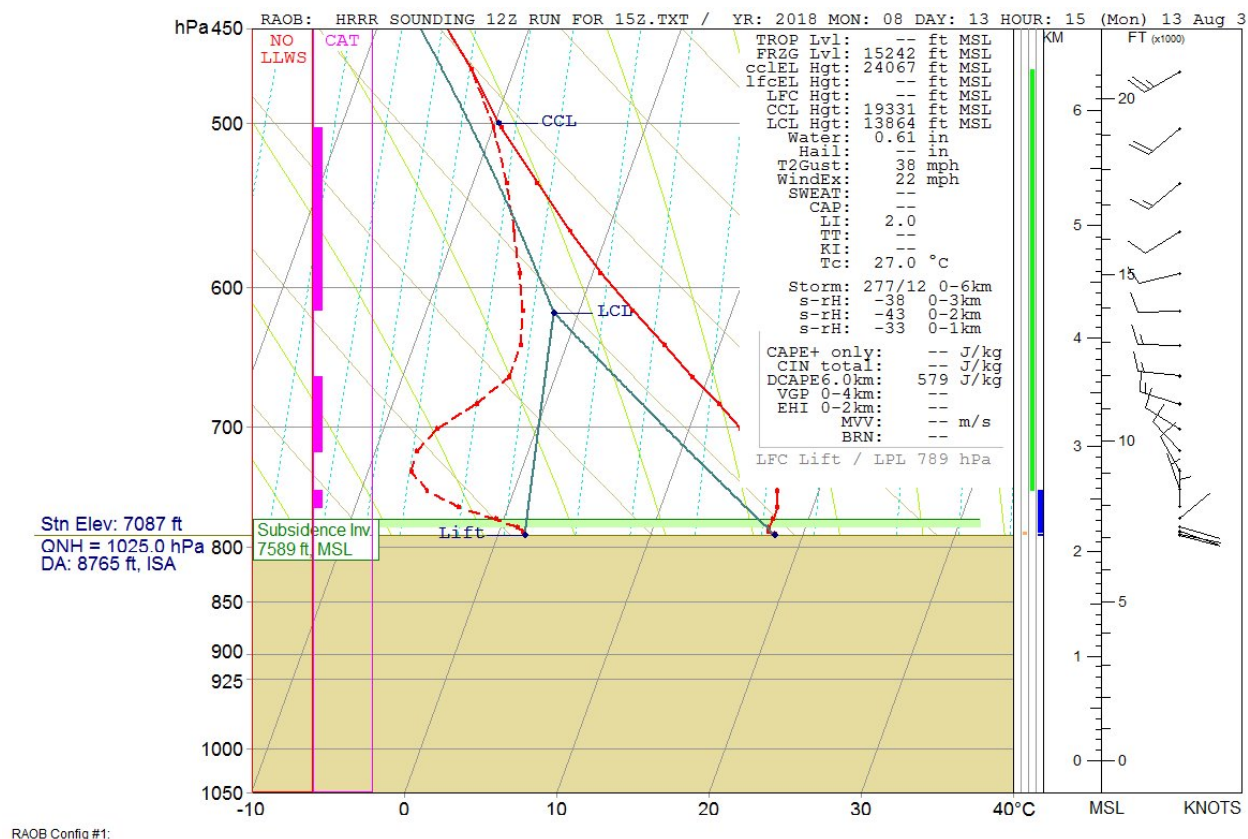


Figure 3 - HRRR numerical model sounding over the accident site at 0900 MDT

The HRRR numerical model sounding based on the 0600 MDT initial data for 0900 MDT indicated a station elevation of 7,087 ft. The model predicted a surface temperature of 18.2° C (64.8° F), a dew point of 1.8° C (35.2° F), with a relative humidity of 33%, and a sea level pressure of 1025-hPa. The resultant density altitude was 8,765 ft (1,678 ft higher than indicated). The sounding indicated a surface based temperature inversion to approximately 500 ft agl (7,589 ft msl). The lifted condensation level was identified at 6,786 agl (13,864 ft msl), with the convective condensation level at 12,244 ft agl (19,331 ft msl). The sounding supported a layer of clouds between approximately 17,000 and 25,000 ft, where the relative humidity exceeded 80%. The freezing level was identified at 15,242 ft msl. The precipitable water content was 0.61 inches. The atmosphere was characterized as conditionally unstable (indicated by the green bar on the right side of the diagram where blue- is stable, green - conditionally unstable, orange - unstable) with a Lifted Index (LI) of +2.0 and a most unstable LI of 0.0. The maximum possible convective wind gust (T2 Gust) was estimated at 33 knots.

⁴ Skew T log P diagram – is a standard meteorological plot or thermodynamic diagram 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.

⁵ RAOB software – The complete RAWinsonde OBServation program is an interactive sounding analysis program developed by Environmental Research Services, Matamoras, Pennsylvania, for plotting and analyzing upper air data.

The HRRR wind profile indicated light easterly winds backing to the north and then to the west above 10,000 ft with slowly increasing wind speeds. The mean 0 to 6 kilometer (km) or 18,000 ft steering winds were from 247° at 16 knots. The HRRR model sounding did not indicate any strong vertical wind shears for any significant turbulence or low-level wind shear (LLWS), and no thermals were indicated by the sounding profile. A review of potential ingredients for severe thunderstorms and microbursts, indicated weak updraft potential, limited moisture, and low Downdraft Convective Available Potential Energy (DCAPE) values to support any strong convective outflows. The lack of any high reflectivity echoes in the vicinity also ruled out any convective wind shear in the vicinity of the accident site.

Figure 4 is a table of the HRRR sounding parameters of height, pressure, temperature (T), dew point (Td), relative humidity (RH), wind direction and speed, and the RAOB algorithm clear air turbulence, LLWS, icing, and mountain wave potential.

Height (ft-MSL)	Pres (hPa)	T (C)	Td (C)	RH (%)	DD / FF (deg / kts)	CAT (FAA)	LLWS	Icing - Type (AFGWC method)	Wave/x---W---Turb nm fpm max
7087	789	18.2	1.8	33	106 / 2				
7123	788	18.2	1.7	33	103 / 2				
7194	786	17.7	1.6	34	110 / 2				
7337	782	17.6	1.1	33	109 / 2				
7589	775	17.7	-0.5	29	48 / 1				
7953	765	17.7	-3.2	24	360 / 3	LGT			
8470	751	17.3	-5.7	20	342 / 6				
9071	735	16.4	-7.2	19	332 / 8				
9683	719	15.1	-7.3	21	320 / 9	LGT			
10385	701	13.4	-6.5	24	304 / 11	LGT			2.60 293 LIGHT
11141	682	11.4	-4.5	32	289 / 15	LGT			5.70 564 LIGHT
11954	662	9.0	-3.0	43	277 / 16				
12911	639	6.4	-3.0	51	272 / 14				
13937	615	3.5	-3.7	59	269 / 12	LGT			
15037	590	0.5	-4.8	68	255 / 10	LGT			
16265	563	-2.5	-6.2	76	235 / 11	LGT			2.49 134 LIGHT
17635	534	-5.8	-7.8	86	228 / 16	LGT		LGT Clear	3.14 152 LIGHT
19215	502	-9.5	-10.0	96	229 / 21			MDT Mixed	
20823	471	-12.8	-12.8	100	237 / 24			MDT Mixed	4.05 239 LIGHT

Figure 4 - HRRR model sounding parameters for 0900 MDT

5.0 Satellite Imagery

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 (McIDAS) software. The infrared long wave and visible imagery were obtained surrounding the time of the accident. The infrared long wave imagery (band 13) at a wavelength of 10.3 microns (μm) provided radiative cloud top temperatures with a nominal spatial resolution of 2 km, with the visible (band 2) at a wavelength of 0.64 μm with a resolution of 1 km.

6.0 Weather Surveillance Radar Imagery

During the period the KSFx WSR-88D was operating in the precipitation mode, volume coverage pattern 215 (VCP-215), where the radar makes 15 different elevation scans in six minutes. This mode is typically used by the NWS during periods when rapidly evolving wide spread convection is expected and allows for improved low-level vertical resolution of the storms.

MET WEATHER STUDY

Based on the antenna height of 4,538 ft the lowest elevation scan of 0.48° extended from approximately 7,290 to 13,730 ft over the accident site, with the center of the beam at 10,510 ft assuming a standard refraction⁷ of the radar beam.

One of the primary products provided by the WSR-88D is base reflectivity in dBZ and provides basic intensity information and is referenced for pilots in Advisory Circular AC 00-24C - “Thunderstorm”. The following table provides the basic reflectivity (dBZ) and echo intensity values.

Reflectivity (dBZ) Ranges	Weather Radar Echo Intensity Terminology
< 30 dBZ	Light
30 – 40 dBZ	Moderate
>40 – 50 dBZ	Heavy
>50 dBZ	Extreme

Figure 6 is the KSFX WSR-88D 0.48° base reflectivity image at 0905 MDT, which depicted a band of very light intensity echoes of 5 to 25 dBZ extending from KAFO southwestward south of the accident site to east of Malad City Airport (KMLD), Malad, Idaho. The echoes were moving with the mean wind flow to the northeast with time.

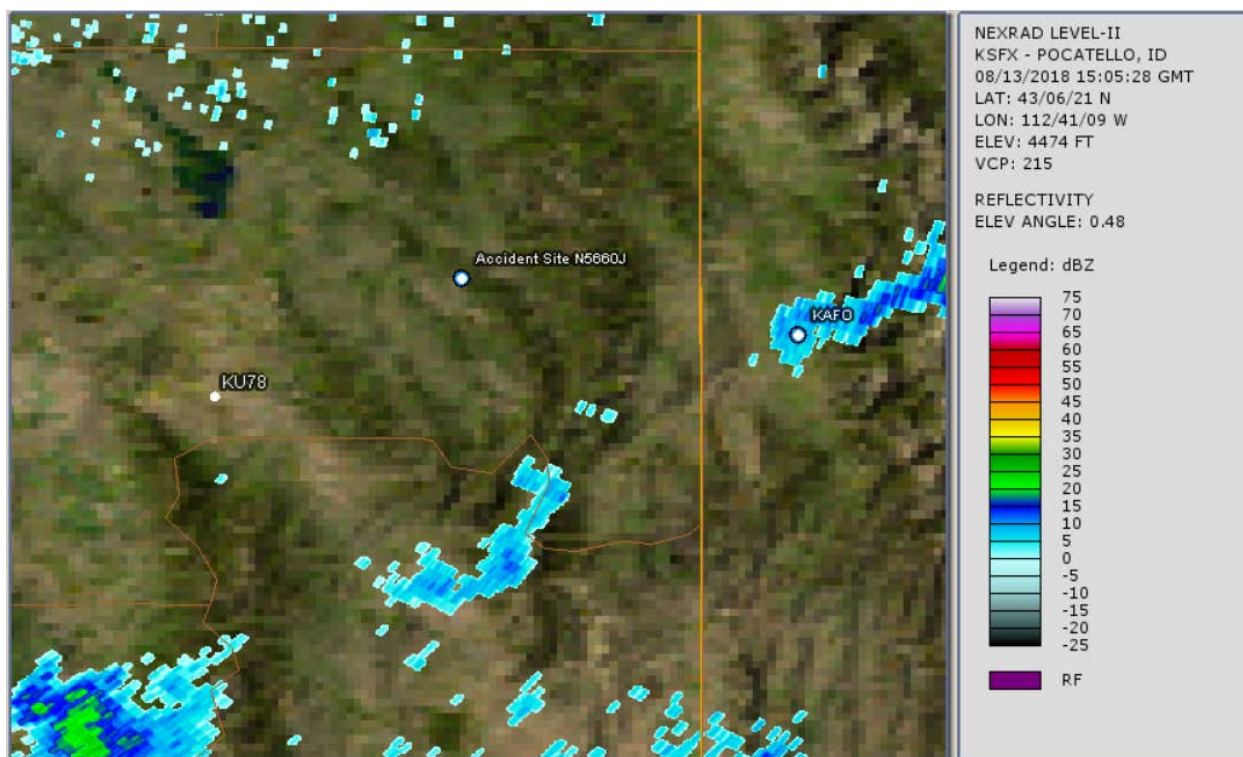


Figure 6 - KSFX 0.48° base reflectivity image at 0905 MDT

⁷ Standard refraction in the atmosphere is when the temperature and humidity distributions are approximately average, and values set at the standard atmosphere.

The KSFY WSR-88D echo tops product indicated the band of light echoes extending over KAFO and to the south of the accident site ranged from 13,000 to 19,000 ft, with the strongest echo to the southwest where echo tops increased to 22,000 ft.

A review of the KSFY WSR-88D 0.48° radial velocity images depicted no strong outflows or any divergence signatures typically associated with a convective outflow boundary or microburst event.

7.0 Pilot Reports

A search of pilot reports or PIREPs over the region surrounding the period indicated no reports within 3 hours either side of the time of the accident and 100 miles of the accident site in the NWS database.

8.0 Winds and Temperature Aloft Forecast

The NWS Winds and Temperature Aloft Forecast current at the time of the accident were valid for 1200 MDT and for use between 0800 and 1500 MDT. The forecast for the area was as follows:

WINDS ALOFT FORECASTS

DATA BASED ON 131200Z

VALID 131800Z FOR USE 1400-2100Z. TEMPS NEG ABV 24000

FT	3000	6000	9000	12000	18000	24000	30000	34000	39000
PIH		9900	2310+17	2814+10	2319-09	2529-21	253236	254045	254855
LND			3410+16	3312+10	2814-09	2616-20	242036	262445	263054

The forecast for Pocatello (KPIH) for 6,000 ft was for winds light and variable at 10 knots or less, and for 9,000 ft from 230° at 10 knots with a temperature of 17° C. The forecast for Lander (KLND), Wyoming, approximately 98 miles east of KAFO for 9,000 ft was wind from 340° at 10 knots with a temperature of 16° C.

9.0 Terminal Aerodrome Forecast

The NWS does not issue a Terminal Aerodrome Forecast for KAFO. The closest TAF to the accident site was from KBPI and KPIH. TAFs are valid for a 5 mile radius around an airport's center point. When planning a flight to an airport that does not have a TAF, pilots typically refer to the closest available TAFs to supplement the information in weather forecast products that cover large areas, such as the Graphic Aviation Forecast (GFA), Airmen's Meteorological Information (AIRMET) bulletins, and other graphical products. The forecast for KBPI was issued by the NWS Riverton (KRIW), Wyoming, Weather Forecast Office (WFO) and the KPIH from the NWS Pocatello, Idaho, WFO.

The following TAF was current for KBPI at the time of the accident.

TAF KBPI 131130Z 1312/1412 33007KT P6SM SCT120
FM131900 30011G17KT P6SM VCSH SCT100 BKN150
FM140300 35008KT P6SM FEW100 BKN200=

The forecast expected a northwest wind from 330° at 7 knots, visibility of 6 miles or more, and scattered clouds at 12,000 ft agl. After 1100 MDT scattered rain showers were expected in the vicinity of the station. There was no inclusion of any low-level wind shear in the forecast, or indications of any potential turbulence.

The following forecast was current for KPIH at the time of the accident:

TAF KPIH 131120Z 1312/1412 VRB05KT P6SM BKN150
FM131700 29010KT P6SM SCT150
FM140300 17005KT P6SM SCT150=

The forecast for KPIH expected wind variable at 5 knots, visibility 6 miles or more, with ceiling broken at 15,000 ft agl.

10.0 NWS Inflight Weather Advisories

The NWS issues inflight weather advisories designated as Severe Weather Forecast Alerts (AWW's), Convective Significant Meteorological Advisories (SIGMET) (WST's), SIGMET's (WS's), Center Weather Advisories (CWA's), and AIRMET's (WA's). Inflight 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.

During the period the NWS had no AWW's or Convective SIGMETs, or SIGMETs current, and there were no CWA or Meteorological Impact Statement (MIS) issued from the Salt Lake City (KZLC) Center Weather Service Unit (CWSU) for the area⁸ during the period. The NWS AWC had an AIRMET Sierra current for mountain obscuration conditions which is included below by the Graphic-AIRMET, followed by the text bulletin. No AIRMETs for current for any turbulence, low-level wind shear, or high winds, and no advisory for any icing conditions outside of convective clouds over Idaho or Wyoming.

⁸ The KZLC had several CWA's issued for thunderstorms and moderate rain over northern Montana and northwest North Dakota during the period, but no advisories over Wyoming or Idaho in the vicinity of the accident site.

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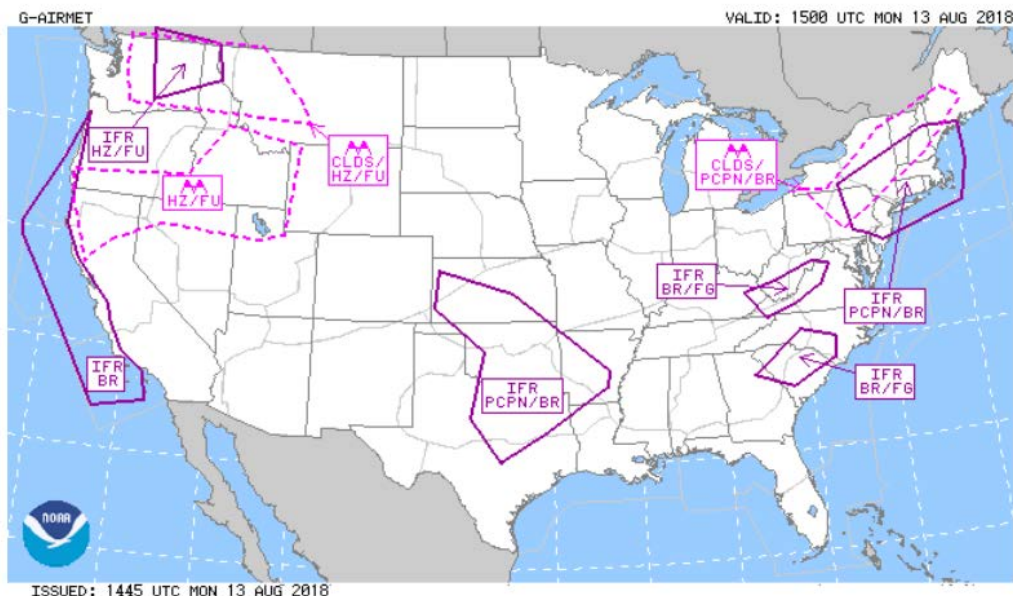


Figure 7 - G-AIRMET Sierra for mountain obscuration conditions

WAUS45 KKCI 131445

WA55

-SLCS WA 131445

AIRMET SIERRA UPDT 2 FOR IFR AND MTN OBSCN VALID UNTIL 132100

AIRMET IFR...ID WA

FROM YDC TO 30S YXC TO MLP TO 30SSE YKM TO YDC

CIG BLW 010/VIS BLW 3SM HZ/FU. CONDS ENDG 15-18Z.

AIRMET MTN OBSCN...ID MT WA OR

FROM 50WSW YXC TO 40SSW YQL TO 40SE GTF TO 80SE HLN TO 30SE BTG

TO SEA TO HUH TO 20SSW YDC TO 50WSW YXC

MTNS OBSC BY CLDS/FU/HZ. CONDS CONTG BYD 21Z ENDG 21-00Z.

AIRMET MTN OBSCN...ID MT WY NV UT CO OR CA

FROM 50NW LKT TO 80SW BIL TO 50S OCS TO 30S MTU TO 40NW DTA TO

20W FMG TO 20ESE PYE TO 30SSE ENI TO 50N FOT TO 60WNW OED TO 40W

BOI TO 50NW LKT

MTNS OBSC BY CLDS/FU/HZ. CONDS CONTG BYD 21Z THRU 03Z.

OTLK VALID 2100-0300Z...MTN OBSCN ID MT WY NV UT CO WA OR CA

BOUNDED BY 50WSW YXC-40SSW YQL-GTF-HVR-30E BIL-30SSW BIL-50S OCS-

30SSW MTU-80SW BAM-20WSW FMG-20ESE PYE-30SSE ENI-50N FOT-70WNW

OED-BTG-30ENE HUH-50WSW YXC

MTNS OBSC BY CLDS/FU/HZ. CONDS CONTG THRU 03Z.

Submitted by:

Don Eick
Senior Meteorologist