



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

July 27, 2020

Weather Study

METEOROLOGY

WPR20LA170

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A. ACCIDENT

Location: Lander, Wyoming
Date: June 7, 2020
Time: about 0830 mountain daylight time
1430 Universal Coordinated Time (UTC)
Aircraft: Experimental Kitfox 1; Registration: N595KF

B. METEOROLOGIST

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C. SUMMARY

On June 7, 2020, about 0830 mountain daylight time, a Kitfox 1 airplane, N595KF, was destroyed when it was involved in an accident near Lander, Wyoming. The private pilot was seriously injured, and the passenger was fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

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 main wreckage site was located at latitude 42.70472° N and longitude 108.8825° W, at an elevation of approximately 8,517 ft.

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) and the Weather Prediction Center (WPC) 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 change 2.

1.1 Surface Analysis Chart

The northcentral section of the NWS Surface Analysis Chart for 0900 MDT is included as figure 1 with the approximate accident site marked by a red star. The chart depicted a low pressure system at 1000-hectopascals (hPa)¹ over northeastern Wyoming along a frontal wave with a cold front extending southward across eastern Wyoming into Colorado, and a warm front turning to a cold front to the northeast across Montana and North Dakota. A trough of low pressure extended northwest from the low across northern Wyoming and then westward across Montana, and then southwestward into Idaho. Another low pressure system at 1003-hPa with an associated cold front was depicted to the west-southwest of the accident site over northern Utah. Two high pressure systems at 1009-hPa and 1007-hPa were located over the Idaho and Wyoming border to the northwest and over the Wyoming and Colorado border to the south of the accident site. A col or saddle point in the pressure field was located over western Wyoming in the immediate vicinity of the accident site.

¹ Hectopascals is the new NWS reference 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 59° Fahrenheit (F) or 15° Celsius (C).

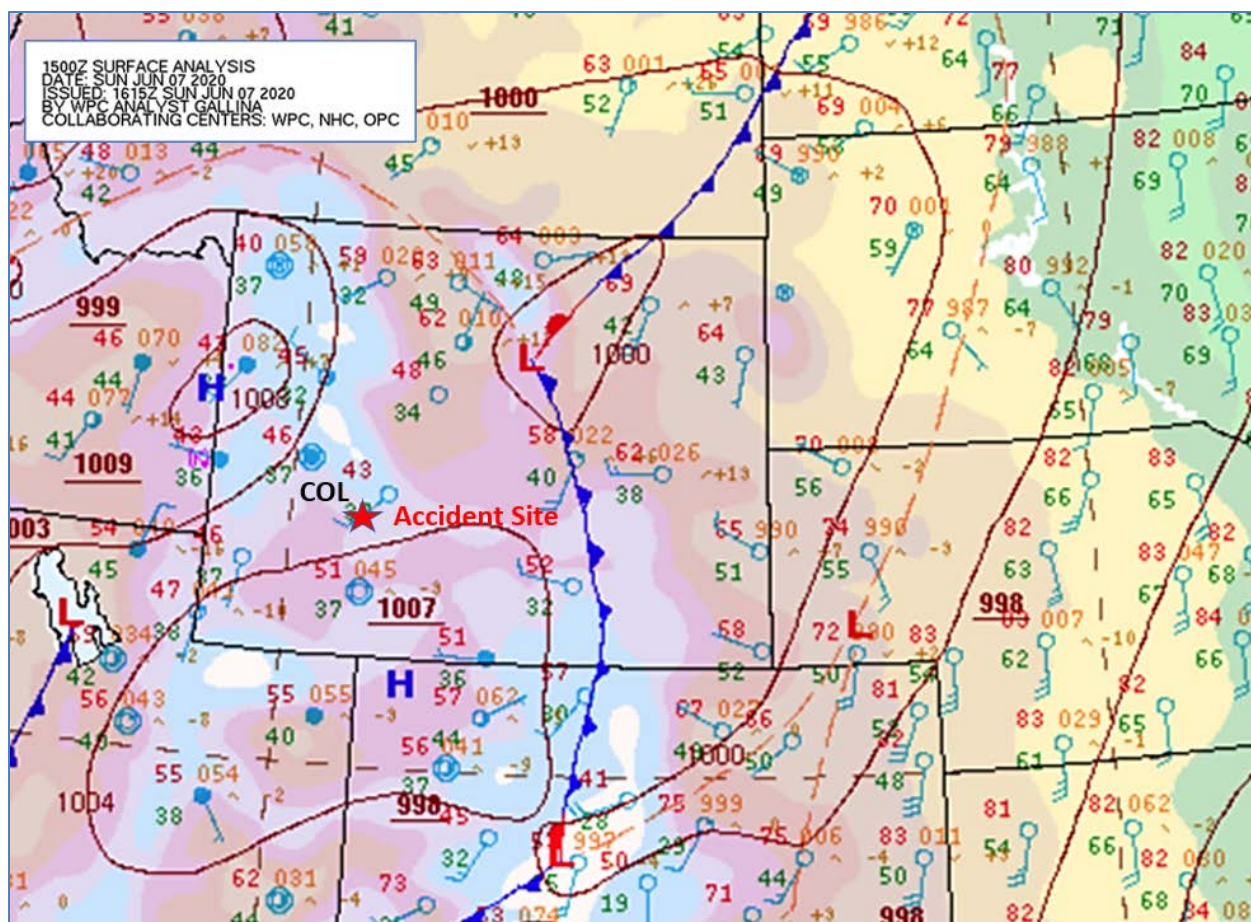


Figure 1 – The northcentral section of the NWS Surface Analysis Chart for 0900 MDT

The station model for Lander, Wyoming, northeast of the accident site indicated a wind from the southwest at 10 knots, clear skies, with a temperature of 43° Fahrenheit (F), and a dew point of 37° F. Several station models west and northwest of the accident site along the Wyoming and Idaho border depicted overcast clouds with rain and thunderstorms.

1.2 National Composite Radar Mosaic

The National Composite Radar Mosaic for 0825 MDT over the region is included as figure 2 with the approximate accident site marked by a red star. The radar mosaic depicted a line of echoes extending from western Wyoming southwestward across Utah in the general vicinity of the low pressure system and associated front shown on the surface analysis chart. Several small very light intensity echoes were also identified along the eastern slopes of the mountains in the general vicinity of the accident site, these echoes were identified as ground clutter with the radar beam hitting terrain.

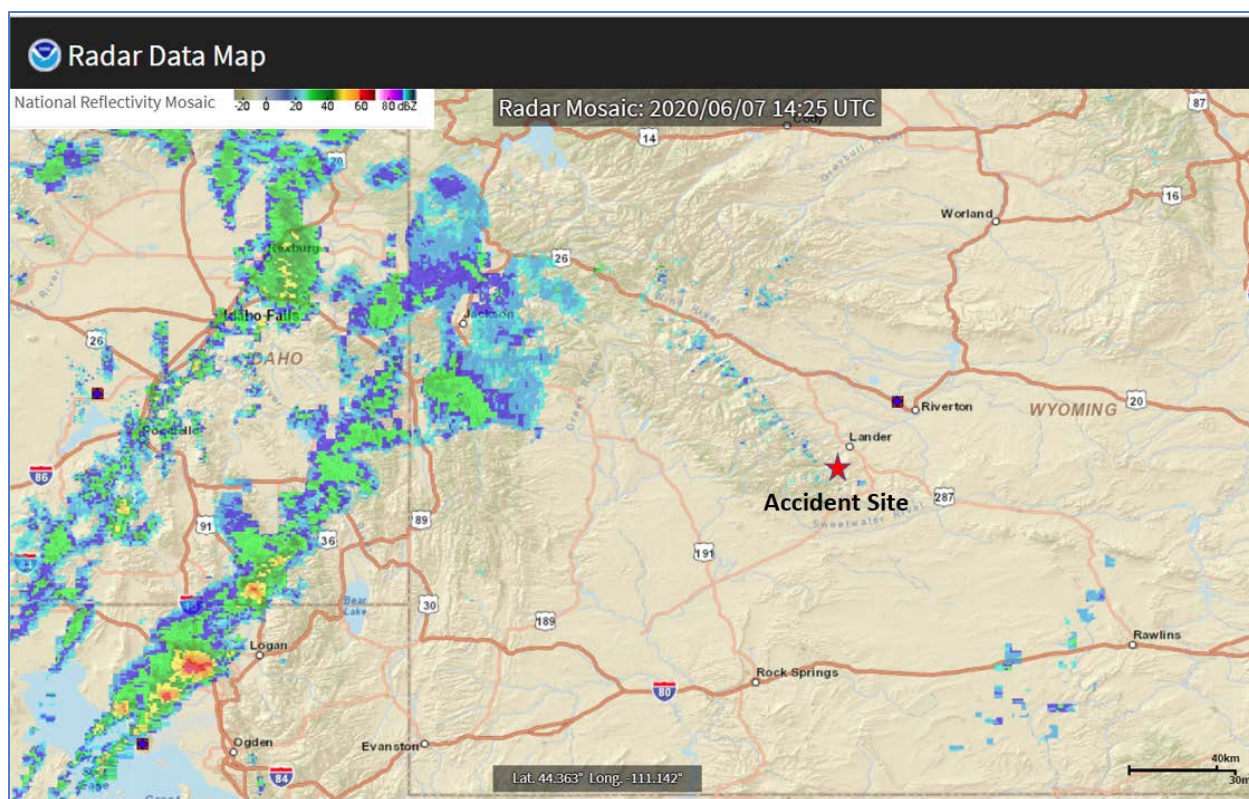


Figure 2 - National Composite Radar Mosaic for 0825 MDT

2.0 Surface Observations

The official observations issued surrounding the accident site were documented using standard meteorological aerodrome reports (METARs) and specials (SPECI). In addition, other interagency Remote Automated Weather Stations (RAWS) were also reviewed over the area. Cloud heights are reported above ground level (agl) in the following section, and the magnetic variation was estimated at 10.5° east based on the latest sectional chart for the area.

2.1 Sinks Canyon Road

The closest observation site to the accident site was from the Sinks Canyon Road RAWS² site (SNWW4) located approximately 3 miles northeast of the accident site at an elevation of 7,083 ft. The following conditions were recorded surrounding the period, with wind speeds converted from miles per hour (mph) to knots (KT), and temperature and dew point rounded to the nearest whole degree F. No station pressure was provided from the RAWS to provide density altitude information.

² Sinks Canyon Station (SNWW4) was located at 42.73361° N -108.8450° W.

Time (MDT)	Wind Dir (°true)	Speed (KT)	Gust (KT)	T (°F)	Td (°F)	RH (%)
0645	213	7	10	50	24	36
0700	224	9	14	50	24	37
0715	246	9	12	50	25	37
0730	250	5	8	51	26	38
0745	297	5	7	51	25	36
0800	233	4	7	52	26	36
0815	192	5	8	52	25	35
0830	306	9	11	53	25	34
0845	289	5	12	54	26	34
0900	273	7	14	55	25	32
0915	226	7	10	54	22	29
0930	306	4	10	56	26	31

The Sinks Canyon Road RAWS indicated that southwest to westerly winds prevailed during the period prior to the accident at 5 to 9 knots with gust as high as 14 knots. At 0815 MDT the wind shifted more to the south, and the wind shifting abruptly at 0830 MDT from the west-northwest or 306° at 9 knots with a peak gust of 11 knots, and a temperature of 53° F and a dew point of 25° F, with a relative humidity of 34%. After 0845 MDT the winds backed from the west-northwest back to the west and then southwest.

2.2 Lander, Wyoming

The next closest official weather reporting facility to the accident site was from Hunt Field (KLND), Lander, Wyoming, located approximately 10 miles northeast of the accident site at an elevation of 5,589 ft. The airport had an Automated Surface Observation System (ASOS) which was not augmented by any human observers. The following conditions were reported at the time of the accident.

KLND weather at 0753 MDT, automated, wind from 030° at 3 knots, visibility 10 statute miles or more, sky clear below 12,000 ft agl, temperature 12° C (54° F), dew point temperature 5° C (41° F), altimeter 29.71 inches of mercury. Remarks: automated station with a precipitation discriminator, sea level pressure 1001.1-hPa, temperature 12.2° C, dew point 5.0° C.

The relative humidity at 0753 MDT was 62% which resulted in a density altitude of 6,930 ft. The general flight categories³ and raw observations from 0553 through 1053 MDT were as follows:

³ As defined by the NWS and the FAA Aeronautical Information Manual (AIM) section 7-1-7 defines the following general flight categories based on weather conditions reported:

- 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.

VFR METAR KLND 071053Z AUTO VRB04KT 10SM CLR 08/05 A2966 RMK AO2 SLP002 T00830050=
VFR METAR KLND 071153Z AUTO 00000KT 10SM CLR 09/05 A2968 RMK AO2 SLP012 70016 T00940050
10161 20078 53009=
VFR METAR KLND 071253Z AUTO 34007KT 10SM CLR 09/06 A2969 RMK AO2 SLP013 T00940056=
VFR METAR KLND 071353Z AUTO 03003KT 10SM CLR 12/05 A2971 RMK AO2 SLP011 T01220050=

Accident 1430Z

VFR METAR KLND 071453Z AUTO 07003KT 10SM CLR 14/04 A2971 RMK AO2 SLP008 T01390039 51009=
VFR METAR KLND 071553Z AUTO 08006KT 10SM CLR 16/03 A2969 RMK AO2 SLP998 T01610028=
VFR METAR KLND 071653Z AUTO 08009KT 10SM CLR 18/02 A2967 RMK AO2 SLP993 T01780017=

A review of the observations surrounding the period indicated VFR conditions prevailed with light easterly winds under 10 knots during the period.

2.3 South Pass City, Wyoming

The next closest reporting facility was located at South Pass (KFWZ), South Pass City, Wyoming, approximately 15 miles south of the accident site at an elevation of 8,491 ft. The Automated Weather Observation System (AWOS) issued observations every 20-minutes and is installed to support aviation but is not associated with an airport. The following conditions were reported at the time of the accident.

KFWZ weather at 0815 MDT, automated, wind from 240° at 14 knots, visibility 10 miles or more, sky clear below 12,000 ft, temperature 5° C (41° F), dew point 2° C (36° F), altimeter 29.78 inches of mercury. Remarks: automated station with a precipitation discriminator.

KFWZ weather at 0835 MDT, automated, wind from 240° at 11 knots gusting to 19 knots, visibility 10 miles or more, sky clear below 12,000 ft, temperature 5° C, dew point 2° C, altimeter 29.79 inches of mercury. Remarks: automated station with a precipitation discriminator, lightning distant west.

The estimated relative humidity during the period was 53%, which resulted in a density altitude of 9,526 ft. The general flight categories and raw observations from 0535 through 0915 MDT were as follows:

LIFR METAR KFWZ 071035Z AUTO 25010KT 7SM OVC001 03/03 A2975 RMK AO2

* 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.

LIFR METAR KFWZ 071055Z AUTO 22005KT 7SM BKN001 03/03 A2973 RMK AO2

LIFR METAR KFWZ 071115Z AUTO 23009KT 3/4SM BR OVC001 03/02 A2975 RMK AO2

LIFR METAR KFWZ 071135Z AUTO 23010G15KT 1/4SM FG OVC001 03/03 A2976 RMK AO2

LIFR METAR KFWZ 071155Z AUTO 23010KT M1/4SM FG OVC001 03/03 A2977 RMK AO2

LIFR METAR KFWZ 071215Z AUTO 23009KT M1/4SM FG OVC001 03/03 A2977 RMK AO2

LIFR METAR KFWZ 071235Z AUTO 24012KT 1/2SM FG OVC001 03/03 A2977 RMK AO2

LIFR METAR KFWZ 071255Z AUTO 24011G19KT 1/2SM FG OVC001 03/03 A2979 RMK AO2 VIS 1/4V5

LIFR METAR KFWZ 071315Z AUTO 25012KT 2 1/2SM BR OVC003 03/03 A2978 RMK AO2 VIS 1/2V5

VFR METAR KFWZ 071335Z AUTO 24011KT 10SM SCT003 03/03 A2978 RMK AO2

VFR METAR KFWZ 071355Z AUTO 25010KT 10SM CLR 05/02 A2978 RMK AO2

VFR METAR KFWZ 071415Z AUTO 24014KT 10SM CLR 05/02 A2978 RMK AO2

Accident 1430Z

VFR METAR KFWZ 071435Z AUTO 24011G19KT 10SM CLR 05/02 A2979 RMK AO2 LTG DSNT W

VFR METAR KFWZ 071455Z AUTO 23010G16KT 10SM CLR 06/03 A2978 RMK AO2 LTG DSNT W

VFR METAR KFWZ 071515Z AUTO 23013KT 10SM SCT015 07/02 A2979 RMK AO2

A review of the observations from KFWZ indicated that LIFR conditions due to low clouds and fog were reported between 2355 through 0735 MDT with conditions clearing to VFR conditions within the hour prior to the accident. Lightning was also detected in the distant west of the station immediately after the accident between 0735 and 0755 MDT, with thunderstorms reported over the station later in the afternoon after the accident.

3.0 Sounding

To determine the vertical structure and state of the atmosphere over the accident site a High-Resolution Rapid Refresh (HRRR)⁴ numerical model data was retrieved from the NOAA Air Resources Laboratory and plotted on a standard Skew T log P diagram⁵ using the complete Rawinsonde Observation RAOB program software⁶. The 0800 MDT HRRR sounding plotted over the accident site is included as figure 3 from the surface to 400-hPa or approximately 24,000 ft.

⁴ 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.

⁵ 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.

⁶ 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.

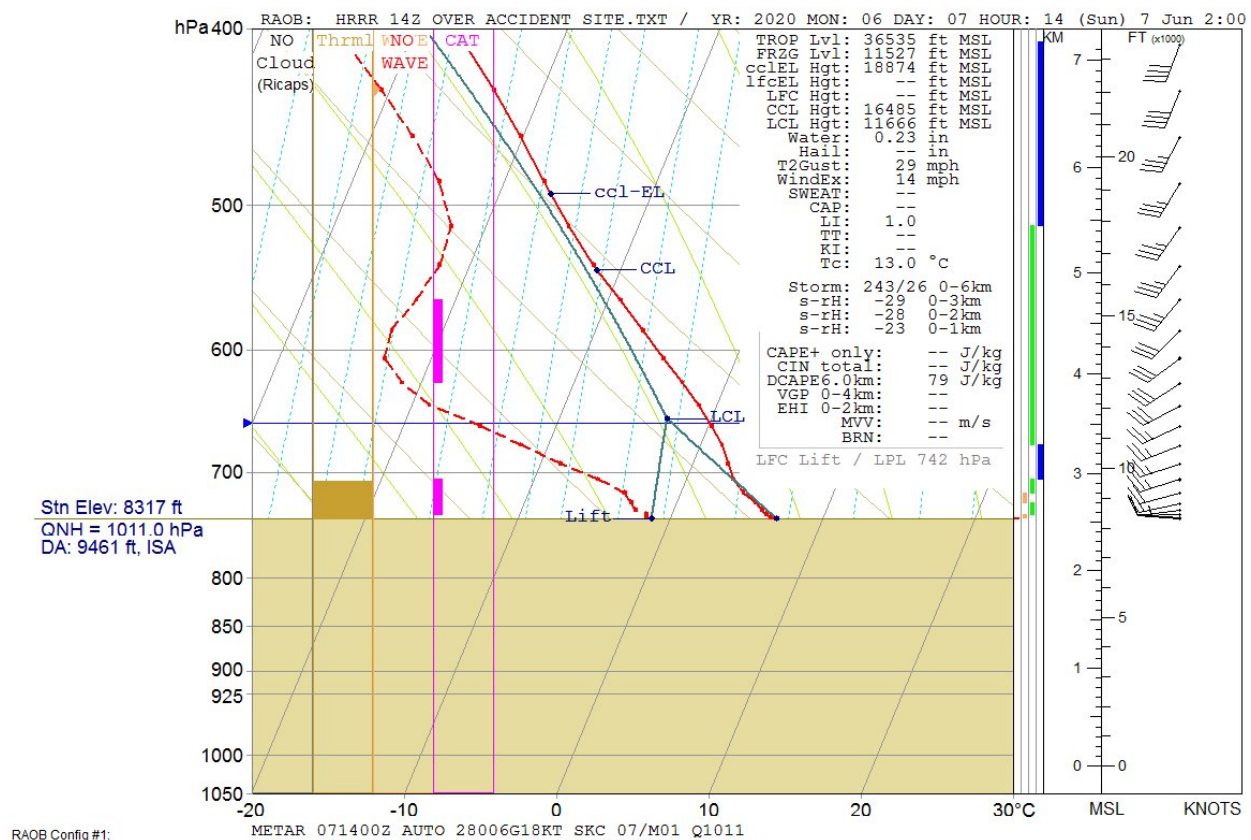


Figure 3 - HRRR sounding over the accident site for 0800 MDT

The HRRR 0800 MDT sounding estimated the surface elevation as 8,317 ft over the area, with a near surface temperature of 7° C (45° F), a dew point of -1° C (30° F), with a relative humidity of 55%, which resulted in a surface density altitude of 9,461 ft. The lifted condensation level (LCL)⁷ was at 3,349 ft agl (11,666 ft msl) with the convective condensation level (CCL)⁸ at 8,148 ft agl (16,465 ft msl). The precipitable water⁹ content was 0.23 inches, and the lack of any significant layers of moisture vertically over the area, RAOB did not support clouds over the accident site. The sounding indicated a Lifted Index¹⁰ of 1 with a conditional unstable atmosphere below 18,000 ft and supported strong surface thermals to approximately 1,200 ft agl

The HRRR wind profile indicated a surface wind from 280° at 6 knots with gusts to approximately 18 knots, with wind backing to the south with height. At approximately 1,000 ft

⁷ Lifted Condensation Level (LCL) - the level at which a lifted parcel becomes saturated. The LCL height corresponds to cloud base height for forced ascent.

⁸ Convective Condensation Level (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.

⁹ Precipitable Water (PW) is a measure of the depth of liquid water at the surface that would result after precipitating all of the water vapor in a vertical column over a given location, usually extending from the surface to 300 mb.

¹⁰ Lifted Index (LI) - the difference between the lifted parcel temperature at 500 hPa and the 500 hPa temperature in the sounding. Negative values denote parcels that are warmer than the background 500 hPa temperatures and are thus buoyant or "unstable".

agl or 9,300 ft msl, the HRRR model indicated a wind from 260° at 25 knots. A potential for light turbulence was depicted below 15,000 ft in the sounding.

4.0 Topographical Features

Figure 4 is a depiction of the topographic features in the vicinity of the accident site from Google Earth Pro. The accident site is noted on the western edge of Frye Lake with a west-southwest to east-northeast ridge less than 1/2 mile immediately south with terrain over 9,000 ft.

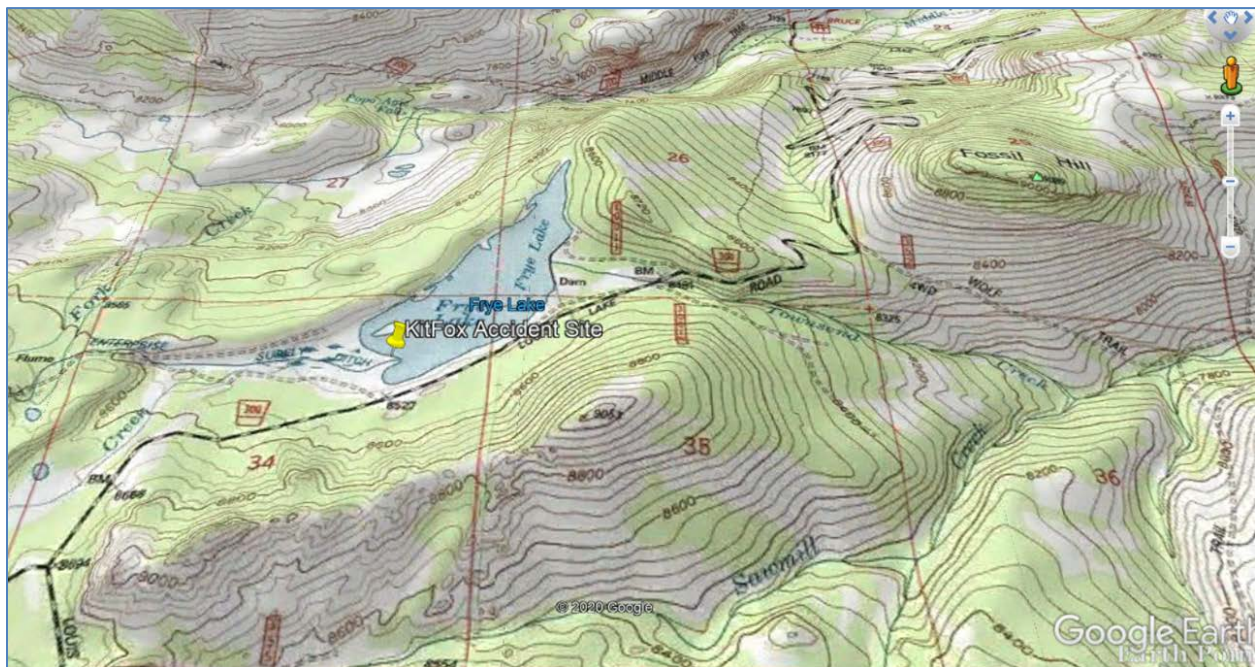


Figure 4 - Topographical features in the vicinity of the accident site

Based on the HRRR wind profile at 9,000 ft to 10,000 ft with winds from the west-southwest at 20 to 25 knots and the topography, would result in the general rising air or updrafts on the southern side of the ridge and downward flow over the Frye Lake area or downdrafts. The cooler temperatures of the lake would also negate any thermal activity or rising motion over the land and result in subsidence¹¹ over the lake.

5.0 Satellite Imagery

The Geostationary Operational Environmental Satellite number 17 (GOES-17) imagery 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 (McIDAS) software. The infrared long wave and visible imagery were obtained for times surrounding the time of the accident, with the images closest to the time of the accident documented below. 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. The visible (band 2) at a wavelength of 0.64 μm provided images at a resolution of 0.5 km.

¹¹ Subsidence – is a descending motion of air.

Figure 6 is the GOES-17 visible image for 0821 MDT at 2X magnification with the accident site marked by a red square. The image depicted clear skies over KLND and the accident site, with a band of snowcapped terrain approximately 4 miles west along the eastern slopes of the mountains and lower stratus type clouds over the basin west of the higher terrain.

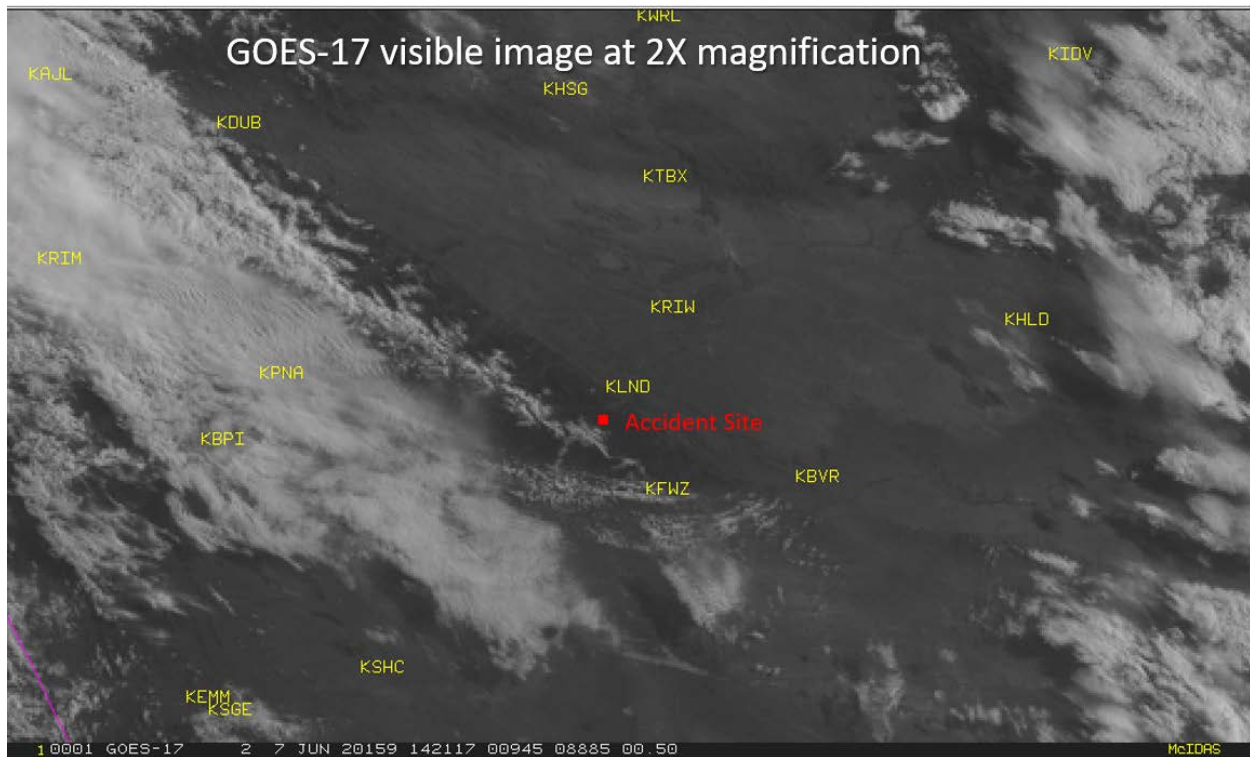


Figure 6 - GOES-17 visible image at 0821 MDT at 2X magnification

6.0 Pilot Reports

A search of pilot reports or PIREPs within 100 miles of the station and below 18,000 ft during the period resulted in the following report. The report in standard code and abbreviations with time referenced to UTC follows along with a plain language decoded report in local time.

BPI UA /OV BP1230040/TM 1704/FL120/TP PA27/TA 26/IC LGT RIME/ZLC

Miley Memorial Field Airport (BPI), Big Piney, Wyoming routine pilot report; Over – 123° azimuth and 40 miles from the Big Piney VORTAC¹² (approximately 40 miles southwest of the accident site); Time – 1104 MDT; Altitude – 12,000 ft; Type aircraft – Piper Aztec multiengine airplane; Temperature – 26° F; Icing – light rime type icing; Remarks – entered by Salt lake City Air Route Traffic Control Center (ZLC ARTCC).

¹² A VORTAC is a radio-based navigational aid for aircraft pilots consisting of a co-located VHF omnidirectional range (VOR) beacon for azimuth data and a tactical air navigation system (TACAN) beacon for distance.

7.0 NWS Forecasts

7.1 Terminal Aerodrome Forecasts

The NWS Riverton (KRIW), Wyoming, Weather Forecast Office (WFO) was responsible for the issuance of the Terminal Aerodrome Forecast (TAF) for KLND. A TAF is a concise statement of the expected meteorological conditions at an airport during a specified period, usually 24 hours. TAFs are valid for a 5 mile radius around an airport's center point. The forecast issued surrounding the period relevant to the preflight planning and the time of the accident was as follows.

TAF KLND 071121Z 0712/0812 VRB05KT P6SM FEW070
FM071600 20008KT P6SM VCSH BKN100
FM071900 25015G25KT P6SM VCTS SCT050 BKN080CB
FM080100 27012G20KT P6SM VCSH BKN090
FM080400 26012G20KT P6SM SCT100=

The forecast for KLND from 0600 through 1000 MDT expected a wind variable at 5 knots, visibility at 6 miles or more, with a few clouds at 7,000 ft agl. The forecast expected thunderstorms in the vicinity after 1000 MDT.

7.2 Area Forecast Discussion

The NWS Area Forecast Discussions (AFD) are issued by each WFO to describe the short term weather conditions within their region with an aviation section that includes the general conditions as it relates to the creation of the TAF. These are useful for additional aviation-related issues that cannot be encoded into the TAF. The discussion also gives some reasoning behind the forecast. These are generated roughly every 6 hours and corresponds to the release of the latest TAFs for that office. The long term sections of the advisory have been excluded. The forecast discussion issued at 0416 MDT was as follows.

*FXUS65 KRIW 071016
AFDRIW*

*Area Forecast Discussion
National Weather Service Riverton WY
416 AM MDT Sun Jun 7 2020*

*.SHORT TERM...(Today through Monday Night)
Issued at 415 AM MDT Sun Jun 7 2020*

Another very active day/night as a strong, cold upper low over the Pacific Northwest early this morning slowly pulls east into Montana by early Monday. Widespread showers and thunderstorms are expected to develop over the west and south this morning/midday and pull northeast across the rest of the forecast area this afternoon and evening. This activity will be aided by a strong left-front exit region of an upper jet streak pulling across the area. The Storm Prediction Center has all of the area in a marginal risk with the primary hazard for strong to possibly damaging wind. Similar to yesterday, instability should be weak, but strong winds aloft could easily mix down to the surface. Localized heavy rainfall could also occur, but doesn't appear to occur in the same places as yesterday so no flood watch, but the creeks on the lee side of the Wind River Mts are running high from yesterday's rain.

The associated cold front from this system is expected to pull into western Wyoming this afternoon, and then across the entire area by late tonight. As this occurs snow levels will drop to valley floors tonight. There

could be a break/lull in the precipitation this evening, before the snow breaks out after midnight with enough accumulating snow for the need of a winter weather advisory for the far northwest zones (1 and 12) through noon Monday. Expect the snow to continue past noon, but most of the impacts should be ending with June insolation. Also, model guidance has freezing/near freezing temps across western valleys including the south and the Dubois area. Since it has been about 2 weeks since the last freeze, and the fact it has been so warm decided to issue a freeze watch tonight for all of the western lower elevations. Although cloud cover looks to remain in place tonight, this storm system looks cold enough to have areas hit freezing despite the cloud cover.

Isolated to scattered showers and thunderstorms are again on tap Monday, but not expected to be severe. By evening this activity is expected to end with a mainly dry night with another good chance of a decent freeze out west.

.AVIATION...(For the 12Z TAFS through 12Z Monday morning)
Issued at 415 AM MDT Sun Jun 7 2020

West of the Divide...KBPI/KJAC/KPNA/KRKS Terminals

Numerous showers and some thunderstorms are expected to develop/push northeast into western Wyoming between 13Z and 16Z. This activity will continue through the afternoon, before a lull in the activity is expected this evening in wake of a cold front. Brief MVFR/IFR conditions could occur at area terminals with frequent mountain obscurations with this convection. The main hazard from this convection will be very strong wind. Tonight, a round of snow is expected over the far west/northwest with MVFR/IFR conditions likely at KJAC after 06Z Monday.

East of the Divide...KCOD/KCPR/~~KLND~~/KRIW/KWRL Terminals

Scattered to numerous showers and thunderstorms are expected this afternoon. Although brief MVFR/IFR conditions are possible in convection, VFR conditions are expected to prevail much of the time. The main hazard from convection will be strong to possibly damaging wind gusts. Much of the convection should end by around 02Z, but cannot rule out some lingering showers through about 09Z.

Please see the Aviation Weather Center and/or CWSU ZDV and ZLC for the latest information on icing and turbulence forecasts.

.FIRE WEATHER...

Issued AT 415 AM MDT Sun Jun 7 2020

Scattered to numerous showers and thunderstorms are expected across much of the area this afternoon and evening. Strong to possibly damaging wind is possible with this activity. Rain changing to snow over the west with accumulating snow in the mountains tonight into Monday. Warmer and drier conditions are expected by middle of the week.

.RIW WATCHES/WARNINGS/ADVISORIES...

Freeze Watch from late tonight through Monday morning for WYZ013-016-023-025>030.

Winter Weather Advisory from 11 PM this evening to noon MDT
Monday for WYZ001-012.

SHORT TERM...Murrell

LONG TERM...Myers

AVIATION...Murrell

FIRE WEATHER...Murrell

7.3 Winds and Temperature Aloft Forecast

The Winds and Temperature Aloft Forecast¹³ (FD) current for the area was valid for 1200 MDT and was for use between 0800 through 1500 MDT and was as follows.

WINDS ALOFT FORECASTS
DATA BASED ON 071200Z
VALID 071800Z FOR USE 1400-2100Z. TEMPS NEG ABV 24000
FT 3000 6000 9000 12000 18000 24000 30000 34000 39000
LND 2011+06 2225-01 2030-16 2141-29 217243 206848 217248
RKS 1915 1919-01 2036-16 2256-28 217642 217247 227748
SLC 2907 2712+00 2217-04 2144-17 2046-30 214946 226747 237847

The forecast for KLND for 9,000 ft, the first available forecast level, expected the wind from 200° at 11 knots with a temperature of 6° C. At 12,000 ft the wind was expected from 220° at 25 knots with a temperature of -1° C.

8.0 NWS Inflight Weather Advisories

Inflight Aviation Weather Advisories are forecasts to advise en route aircraft of development of potentially hazardous weather. Inflight aviation weather advisories in the conterminous U.S. are issued by the NWS AWC, as well as from the Center Weather Service Units (CWSU) associated with FAA ARTCCs. There are four basic types of inflight aviation weather advisories: the Significant Meteorological Information (SIGMET), the Convective SIGMET, the AIRMET, and the Center Weather Advisory (CWA). 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. The following advisories were current during the period.

The NWS AWC had a Convective SIGMET for thunderstorms over Utah immediately west of the accident area and an AIRMET current for icing conditions over and west of the accident site. However, satellite imagery and the sounding did not detect any clouds over the accident site to imply any potential icing encounter. Otherwise there were no SIGMET, Convective SIGMET, AIRMETs, or CWA's current for the area.

9.0 Witness Statements

Several witnesses were in the vicinity of Frye Lake and observed the accident airplane and provided statements of their observations of the events. The statements are included in the docket. A short summary of their statements regarding the weather conditions were as follows.

¹³ Derived from FBUS31 KWNO winds aloft bulletin.

Witness 1 – stated that when he saw the accident airplane, he knew it was out of control. It was at about 100 ft above the lake. He then observed the aircraft turn left, assuming to avoid people near the lake, when the wind caught the aircraft in the left turn and put them into a nose-dive.

Witness 2 – was camping at Frye Lake and observed the accident airplane approach them from the east, pass in front of their camp site over the lake. He described the aircraft as being very low and appeared to be struggling. The witness indicated he was deaf and could not hear the engine. He then observed the plane wobbled, then it dipped a bit, then rose and made a sharp left, when the wind caught it and the aircraft nose-dived into the lake. He then immediately responded to the water and helped in the rescue response with first aid to the pilot who had exited the airplane and swam to shore. He indicated the accident occurred at approximately 0830 MDT.

Witness 3 – was camping with her family and observed the accident airplane approach over the Frye Lake. She indicated it appeared to be flying really low as if it was coming in for a landing. As it got close to shore it then banked left, reversing its course. She indicated that it had been so windy, she didn't know if the wind caught it, as when it banked left, it just nose-dived into the lake. She also responded to the emergency.

Witness 4 – was camping on the west side of Frye Lake and indicated that at approximately 0830 MDT she noticed a plane flying low and approach the area on the west side of the lake. She waved at the airplane as it was so close. She also indicated that the accident airplane was not flying smoothly and was very close to the ground, when it made an abrupt left turn, and caught an updraft wind gust, and veered more to the left and took a nose-dive into the lake. The aircraft burst into flames as they were running to the shore responding to the accident.

Witness 5 – also indicated that at approximately 0830 MDT he observed the airplane approach Frye Lake and provided a sketch of the low flight path, the left turn, and then an odd wobble, the aircraft rising left turn, and then a sharp nose dive into the lake. Figure 7 is a depiction of the witness depiction of the accident sequent and location relative to Lake Frye.



Figure 7 - Witness depiction of the accident sequence

Four of the five witnesses mentioned wind catching the aircraft, with one mentioning that it had been windy prior to the accident and one mentioning updrafts, which can also infer downdrafts. All described the accident airplane flying low and struggling, which could be an indication of the relatively high density altitude impacting aircraft performance.

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