

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



WPR24FA291

METEOROLOGY

Environmental Conditions

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Submitted by:

Donald Eick
Senior Meteorologist

A. FACTUAL INFORMATION

1.0 Synoptic Conditions

The NWS Surface Analysis Chart for 1100 MDT (1800Z) is included as figure 1. The chart depicted high-pressure systems over western Wyoming at 1024-hectopascals (hPa) and a stationary front extending southeastward across Montana into central Wyoming. The station models depicted light winds over the area and clear skies.

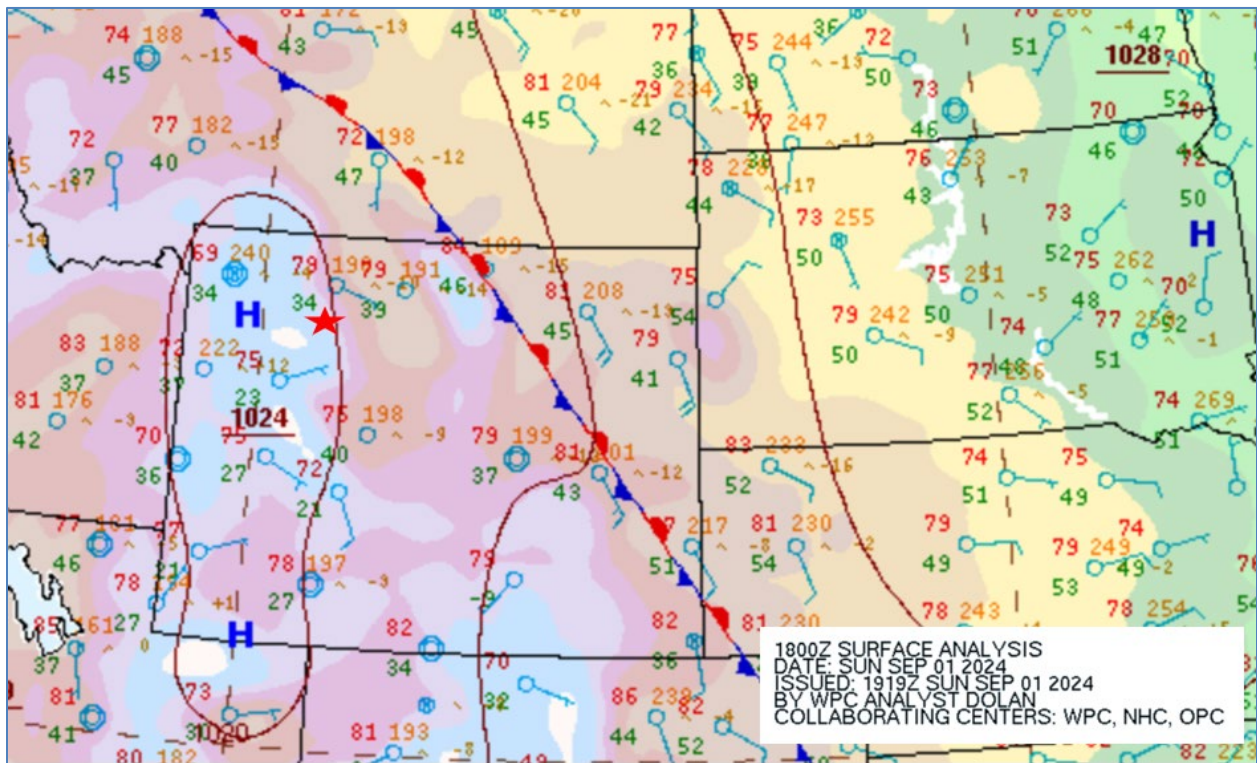


Figure 1 - NWS Surface Analysis Chart valid for 1100 MDT with the approximate accident location noted by the red star.

2.0 Surface Observations

The area surrounding the accident site was documented using official Aviation Routine Weather Reports (METAR) and Aviation Selected Special Weather Reports (SPECI). Cloud heights are reported above ground level (agl) in the following section.

2.1 Cody, Wyoming

The closest weather reporting location to the accident site was from Yellowstone regional Airport (KCOD), located approximately 37 miles northeast of the accident site at an elevation of 5,102 ft. The airport had an Automated Weather Observation System, whose reports were not augmented. The following conditions were reported surrounding the period of the accident:

VFR METAR KCOD 011556Z AUTO 0000KT 10SM CLR 21/02 A3029 RMK AO2 SLP207 T02060022=
VFR METAR KCOD 011656Z AUTO 28005KT 10SM CLR 23/03 A3028 RMK AO2 SLP202 T02330033=
Accident 1702Z
VFR METAR KCOD 011756Z AUTO 11007KT 10SM CLR 26/01 A3026 RMK AO2 SLP198 T02610011
10261 20100 58010=
VFR METAR KCOD 011856Z AUTO VRB06KT 8SM CLR 28/02 A3023 RMK AO2 SLP186 T02830017=
IFR SPECI KCOD 011936Z AUTO 15007G14KT 1 3/4SM HZ CLR 31/01 A3022 RMK AO2 VIS 1/2V5=
MVFR SPECI KCOD 011940Z AUTO 10008KT 4SM HZ CLR 31/01 A3021 RMK AO2=
IFR METAR KCOD 011956Z AUTO 11008KT 2 1/2SM HZ CLR 31/02 A3021 RMK AO2 VIS 1V5 SLP170
T03060017=
MVFR SPECI KCOD 012008Z AUTO 11010KT 5SM HZ CLR 31/01 A3020 RMK AO2=

A sudden deterioration in visibility in haze was noted after the accident with surface visibility as low as ½ mile. The restriction was not expected, while slightly stronger winds were expected with the heating of the day.

3.0 Sounding

A High-Resolution Rapid Refresh (HRRR) numerical model data was obtained from the NOAA Air Resources Laboratory archive for 1100 MDT over the closest grid point to the accident site. The data was then plotted on a standard Skew T/log P diagram using the RAOB Analysis software from the surface to 450-hPa or about 20,000 ft and is included as figure 2.

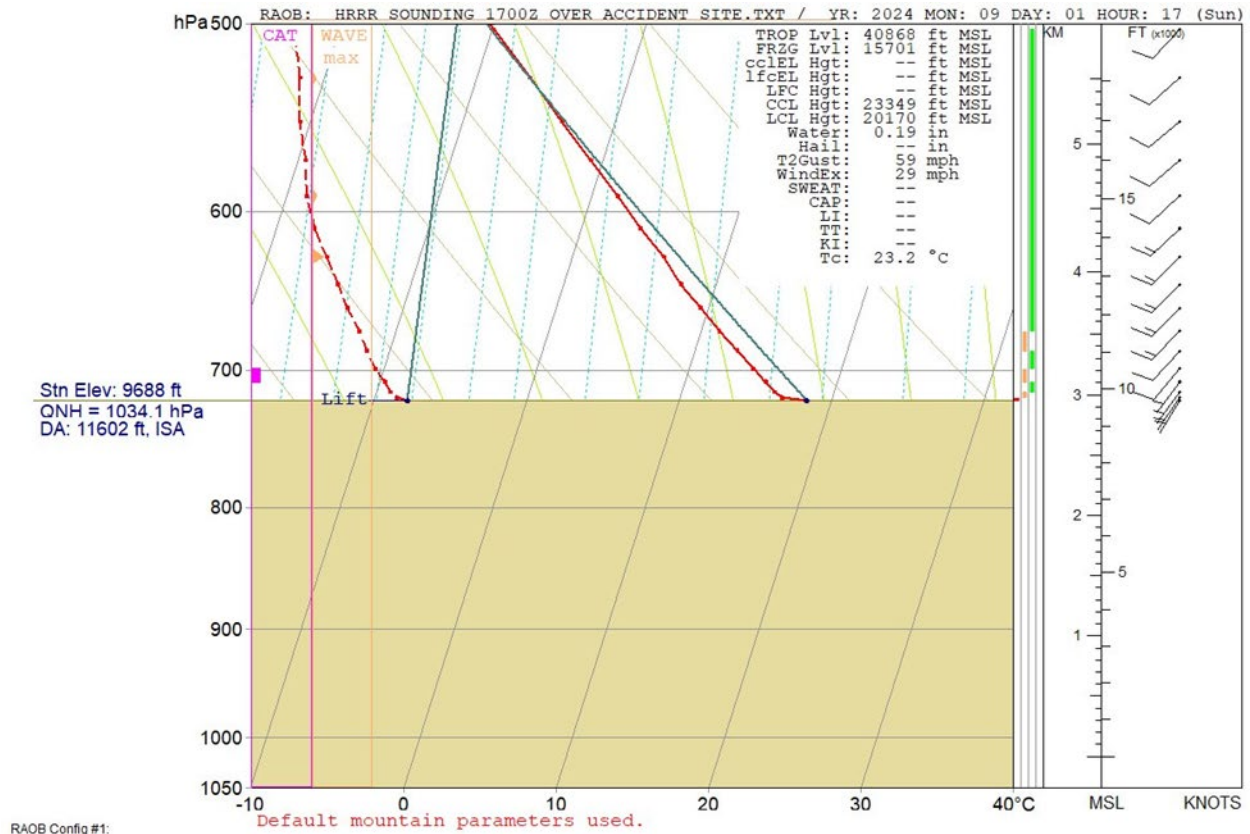


Figure 2 - High-Resolution Rapid Refresh (HRRR) numerical model sounding over the closest grid point to the accident for 1100 MDT.

The sounding indicated an estimated surface wind from 210° at 3 knots, clear skies, with a near surface temperature of 65°F (18.4°C), a dew point temperature of 18°F (-7.8°C), with a relative humidity of 16%, an elevation of 9,688 ft with a density altitude of 11,600 ft. The atmosphere was characterized as conditionally unstable and support strong thermals to 18,000 ft. The sounding precipitable water content was 0.19 inches. The sounding vertical wind profile showed winds from the southwest with little variation in direction with height, with the winds increasing to 15 knots at about 12,000 ft. No strong vertical wind shears were noted to imply anything other than light turbulence. The RAOB Analysis program suggested the potential for a wave near 13,000 ft with a wavelength of 3.42 miles, and an amplitude of 941 ft, and maximum vertical velocity near 374 ft, and capable for light turbulence. This was assuming the worst case atmospheric scenario regarding terrain features.

Due to the low relative humidity, there was a no threat for carburetor type icing conditions.

4.0 NWS Forecasts

4.1 Terminal Aerodrome Forecast

The closest Terminal Aerodrome Forecast (TAF) to the accident site was issued for KCOD. While a TAF is only valid for a 5 mile radius of the airport center point, pilots and weather briefing systems will often refer to the closest TAF for a more time specific breakdown of forecast weather over the region. The TAF current at the time of the accident was as follows.

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TAF KCOD 011120Z 0112/0212 22004KT P6SM SKC  
FM011800 14011G20KT P6SM SKC  
FM020100 24011KT P6SM SCT150=
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