



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

January 25, 2022

Specialist's Factual Report

METEOROLOGY

CEN22FA086

Table Of Contents

A.	ACCIDENT	3
B.	METEOROLOGIST	3
C.	DETAILS OF THE INVESTIGATION	3
D.	WEATHER INFORMATION	3
1.0	Surface Observations	3
2.0	HRRR Model Sounding.....	4
3.0	Area Forecast Discussion.....	5
4.0	Weather Radar	6

A. ACCIDENT

Location: Livingston, Texas
Date: December 30, 2021
Time: 1141 central standard time (1741 UTC)¹
Aircraft: Type – Bell 206B; Registration – N8AU

B. METEOROLOGIST

Mike Richards
Senior Meteorologist
Operational Factors Division (AS-30)
National Transportation Safety Board

C. DETAILS OF THE INVESTIGATION

The National Transportation Safety Board's meteorological specialist did not travel in support of this accident investigation and gathered all weather data remotely. Unless otherwise noted, all times are in central standard time (CST) for December 30, 2021 (based upon the 24-hour clock), directions are referenced to true north, distances are in nautical miles and heights are above mean sea level (msl). The accident site was located at about: 30.648176° north latitude; 94.91511° west longitude at an elevation of about 265 feet.

This report provides information on the wind applicable to the accident location at the accident time.

D. WEATHER INFORMATION

1.0 Surface Observations

Unofficial meteorological reporting station LVDT2 (data courtesy of MesoWest²) was located about 5 miles west of the accident site at an elevation of 141 feet. Type, calibration, maintenance, and siting standards of this instrument, as well as the overall quality of the data, are not known. Reporting of wind parameters³ from LVDT2 during the times surrounding the accident time are presented here (time in CST):

<u>Time</u>	<u>W_Mag</u>	<u>W_Dir</u>
1100	2.4	351°
1115	5.3	332°
1130	4.8	353°
1145	3.6	357°

¹ UTC – abbreviation for Coordinated Universal Time

² <https://mesowest.utah.edu>

³ W_Mag=average wind magnitude (miles-per-hour[mph]); W_Dir=average wind direction (true)

1200	3.3	013°
1215	2.7	030°
1230	1.6	013°

Unofficial meteorological reporting station F9014 (data courtesy of MesoWest) was located about 7 miles west-northwest of the accident site at an elevation of 141 feet. Type, calibration, maintenance, and siting standards of this instrument, as well as the overall quality of the data, are not known. Reporting of certain parameters⁴ from F9014 during the times surrounding the accident time are presented here (time in CST):

<u>Time</u>	<u>W_Mag</u>	<u>W_Dir</u>	<u>G_Mag</u>
1101	2	011°	3
1116	0	----	0
1131	2	159°	5
1146	1	159°	2
1202	1	159°	4
1217	1	182°	3

Unofficial meteorological reporting station CPGT2 (data courtesy of MesoWest) was located about 12 miles southwest of the accident site at an elevation of 145 feet. Type, calibration, maintenance, and siting standards of this instrument, as well as the overall quality of the data, are not known. Reporting of certain parameters⁵ from CPGT2 during the times surrounding the accident time are presented here (time in CST):

<u>Time</u>	<u>W_Mag</u>	<u>W_Dir</u>	<u>G_Mag</u>
1002	1	190°	3
1102	2	138°	5
1202	3	101°	6
1302	2	196°	7

2.0 HRRR Model Sounding

A High-Resolution Rapid Refresh (HRRR) model⁶ sounding for near the accident site⁷ at 1200 CST using an elevation of 259 feet was retrieved from the National Oceanic and Atmospheric Administration's Air Resources Laboratory and analyzed by the RAwinsonde OBservation

⁴ W_Mag=average wind magnitude (mph); W_Dir=average wind direction (true); G_Mag=gust wind magnitude (mph))

⁵ W_Mag=average wind magnitude (mph); W_Dir=average wind direction (true); G_Mag=gust wind magnitude (mph))

⁶ The HRRR is a 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.

⁷ Coordinates used for the model were 30.65, -94.92.

(RAOB) program. The table below presents HRRR (and interpolated) wind magnitudes (“W_Mag”) and wind directions (“W_Dir”) for the lowest 1,000 feet agl near the accident site.

<u>Height agl (feet)</u>	<u>W_Mag (knots)</u>	<u>W_Dir (true)</u>
0	2	235°
50	2	236°
100	2	235°
150	2	233°
200	2	230°
250	2	227°
300	2	224°
350	2	223°
400	2	221°
450	2	219°
500	2	217°
550	2	215°
600	2	211°
650	2	207°
700	2	203°
750	3	199°
800	3	195°
850	3	191°
900	3	187°
950	3	183°
1000	3	181°

3.0 Area Forecast Discussion

The National Weather Service Weather Forecast Office in Houston, Texas, issued the following sections of an Area Forecast Discussion at 1144 CST.

FXUS64 KHGX 301744

AFDHGX

Area Forecast Discussion

National Weather Service Houston/Galveston TX

1144 AM CST Thu Dec 30 2021

.SHORT TERM [Rest of Today/Tonight]...

The Dense Fog Advisory for inland locations was allowed to expire as planned for 9AM this morning, but remaining in place for parts of the coast/nearshore waters as the sea fog persists. This light wind regime currently over SE TX will keep hazy skies in place as well. Otherwise, no major changes planned for today as this warm/moist pattern remains in place.

Of note: We have already seen one record high fall today. Scholes Field (GLS) has a preliminary high of 78F (so far)...breaking the old record of 75F set in 2020. Will issue the RER shortly. 41

&&

.AVIATION [18Z TAF Issuance]...

Conditions have improved across the CWA, most notably over the more northern sites as slightly stronger winds have helped mix things out. For the central terminals, MVFR ceilings and visi-bilities could linger through the rest of the afternoon...with only a very brief break to VFR possible. Along the coast, VIS/CIG issues will remain in place per sea fog. While models seem to be hinting at slightly stronger winds (and perhaps less fog and low cloud development), opted to keep with similar trends/persistence for tonight and tomorrow morning. 41

4.0 Weather Radar

A review of weather radar (WSR-88D) imagery did not produce any applicable values of radial velocity⁸ near the accident location at the accident time.

Submitted by:

Mike Richards
Senior Meteorologist

⁸ The radial velocity is the component of a target's velocity that points in the direction of the radius connecting the target and the radar.