



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

January 27, 2021

Specialist's Report

METEOROLOGY

ERA21LA111

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A. ACCIDENT

Location: Boynton Beach, Florida
Date: January 24, 2021
Time: 2001 eastern standard time (0101 UTC on January 25, 2021)¹
Aircraft: Type – Piper PA-28-161; Registration – N266ND

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 eastern standard time (EST) for January 24, 2020 (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: 26.54121° north latitude; 80.03705° west longitude at sea level.

This report provides limited meteorological information on the weather conditions applicable to the accident region around the accident time.

D. WEATHER INFORMATION

1.0 Surface Observations

An Automated Weather Observing System (AWOS) was located at Palm Beach County Park Airport (LNA) in West Palm Beach, Florida, which was located 4 miles northwest of the accident location at an elevation of about 15 feet and had a magnetic variation of about 7° west. Automated longline² reports from the LNA weather station during the times surrounding the accident time are presented here.

¹ UTC – abbreviation for Coordinated Universal Time

² “Longline” refers to the dissemination of weather observations with the intent that they are available in near-real time to national databases (effectively, the whole world) and accessible to the general global public from a large number of vendors. This does not include public accessibility to observations from a reporting station’s Very High Frequency (VHF; line-of-site) or telephone broadcast, where applicable. Longline-dissemination of weather observations is the primary vehicle through which the general global public has access to surface weather observations, particularly outside of the aviation community.

[1915 EST] METAR KLNA 250015Z AUTO 08005KT 10SM SCT018 SCT027 23/20
A3010 RMK AO2 T02310201 PNO=

[1935 EST] METAR KLNA 250035Z AUTO 08005KT 10SM SCT018 23/20 A3010
RMK AO2 T02320203 PNO=

**[1955 EST] METAR KLNA 250055Z AUTO 08006KT 10SM SCT022 23/20 A3011
RMK AO2 T02320200 PNO=**

[2015 EST] METAR KLNA 250115Z AUTO 08005KT 10SM SCT022 23/20 A3011
RMK AO2 T02320202 PNO=

At 1955 EST, the LNA AWOS reported a wind from 080° at 6 knots, visibility of 10 statute miles or greater, scattered clouds at 2,200 feet above ground level (agl), temperature of 23° Celsius (C) and a dew point temperature of 20°C, altimeter setting of 30.11 inches of mercury; remarks: automated station with a precipitation discriminator, temperature of 23.2°C and a dew point temperature of 20.0°C, precipitation amount not available.

An Automated Surface Observing System (ASOS) was located at Palm Beach International Airport (PBI) in West Palm Beach, Florida, which was located 9 miles north-northwest of the accident location at an elevation of about 20 feet and had a magnetic variation of about 7° west. Augmented longline reports from the PBI ASOS during the times surrounding the accident time are presented here.

[1923 EST] SPECI KPBI 250023Z 08008KT 10SM SCT020 BKN250 23/19 A3010
RMK AO2 T02280189 \$=

**[1953 EST] METAR KPBI 250053Z 09007KT 10SM SCT020 SCT250 23/19 A3011
RMK AO2 SLP194 T02280189 \$=**

[2053 EST] METAR KPBI 250153Z 09007KT 10SM SCT017 SCT250 23/19 A3011
RMK AO2 SLP195 T02280189 \$=

At 1953 EST, the PBI ASOS reported (as augmented) a wind from 090° at 7 knots, visibility of 10 statute miles or greater, scattered clouds at 2,000 feet agl, scattered clouds at 25,000 feet agl, temperature of 23°C and a dew point temperature of 19°C, altimeter setting of 30.11 inches of mercury; remarks: automated station with a precipitation discriminator, sea level pressure of 1019.4 hectopascals (hPa), temperature of 22.8°C and a dew point temperature of 18.9°C, maintenance needed on the system.

2.0 Weather Radar

A Terminal Doppler Weather Radar (TDWR) image from the Palm Beach, Florida (TPBI), TDWR is presented in figure 1. TPBI was located about 15 miles northwest of the accident location at an elevation of about 5 feet. Assuming standard refraction and considering the 0.55° beam width for the TDWR radar beam, the TPBI 0.088° tilt would have “seen” altitudes above the accident location of between about the surface and 750 feet above msl.

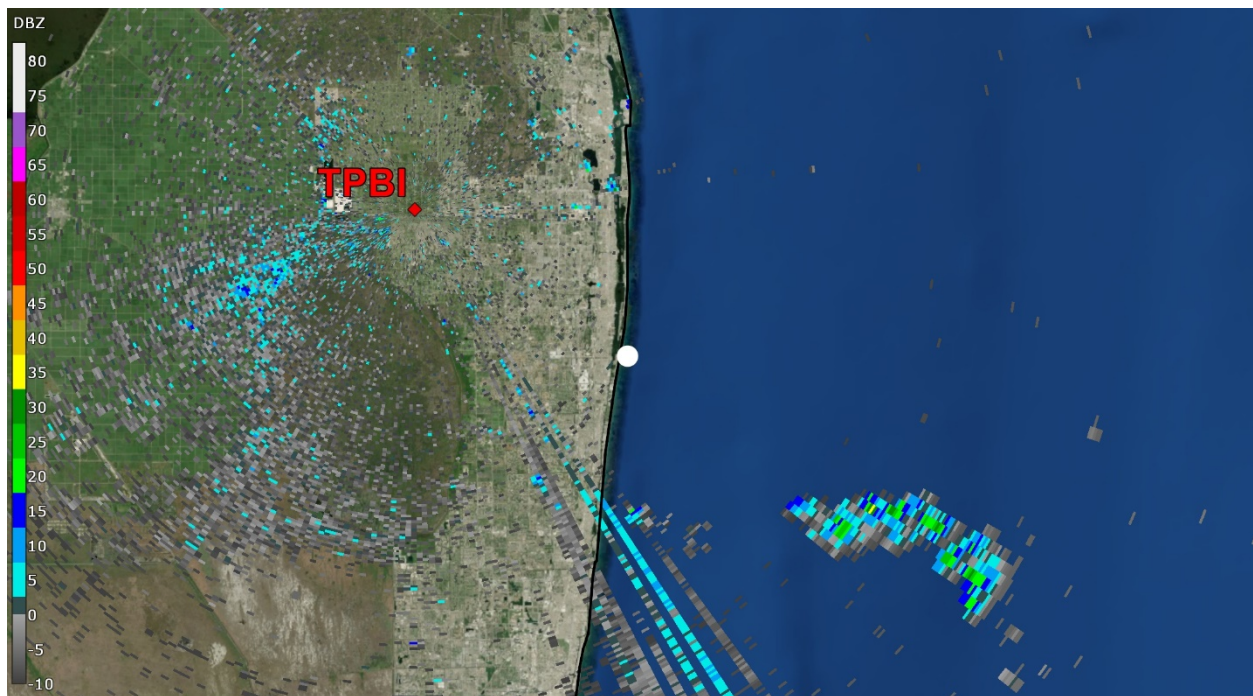


Figure 1 – TPBI 0.088° reflectivity product from a sweep initiated at 2005 EST. Accident location denoted by the white circle.

3.0 HRRR Model Sounding

A High-Resolution Rapid Refresh (HRRR) model³ sounding (figure 2) for the accident site at 2000 EST was retrieved from the National Oceanic and Atmospheric Administration’s Air Resources Laboratory. Below 5,000 feet the wind was from the east at magnitudes of 10 knots or less. According to the Rawinsonde OBservation Program (RAOB) there were no turbulence or low-level wind shear threats below 5,000 feet. The freezing level was above 15,000 feet. According to RAOB, cloudy conditions were possible between about 1,500 and 5,700 feet.

³ 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.

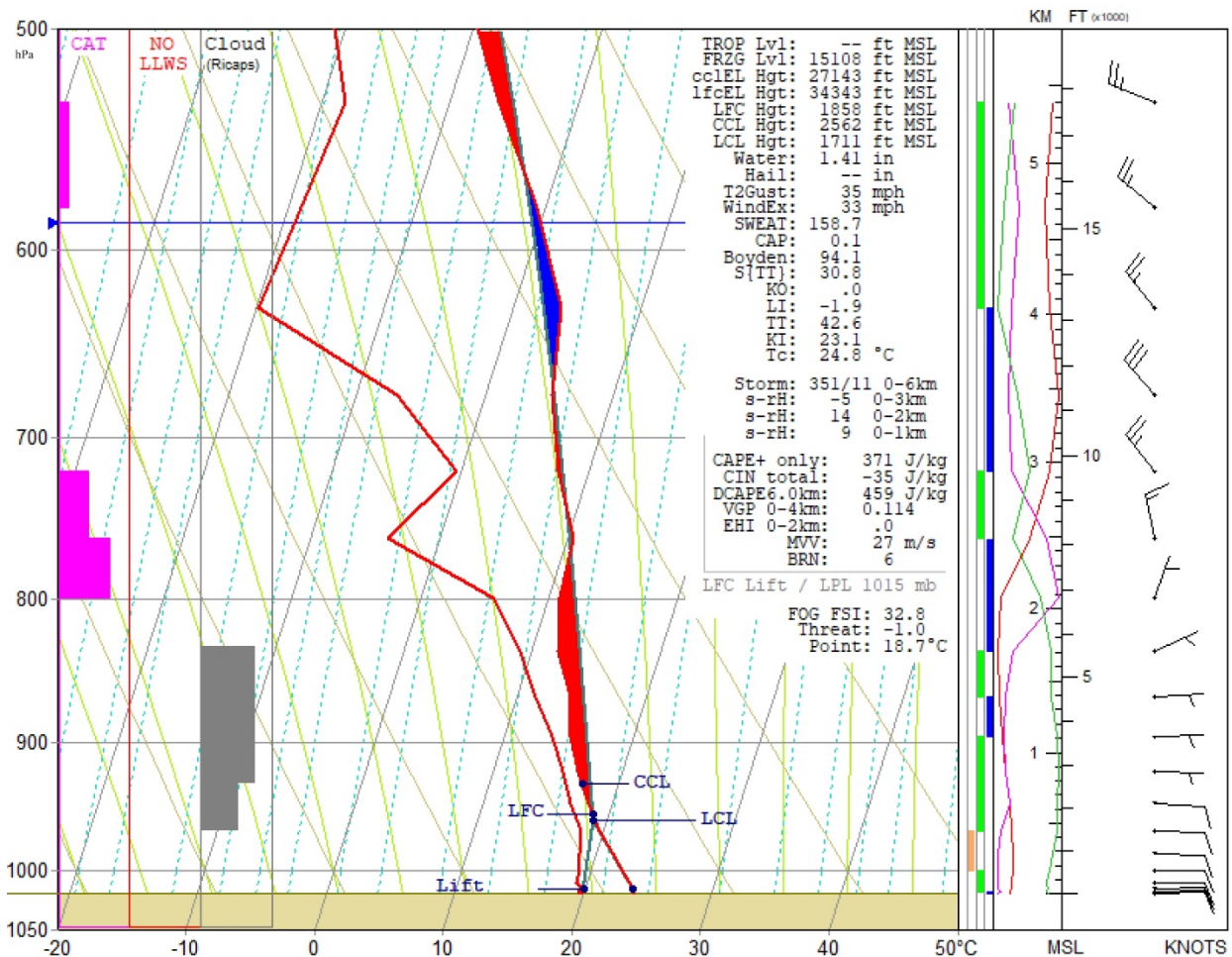


Figure 2 – HRRR model sounding data in SkewT/LogP format for 2000 EST at the accident site, surface to 500 hPa.

4.0 Satellite Imagery

Geostationary Operational Environmental Satellite (GOES)-16 infrared ($10.3\mu\text{m}$) data were obtained from an archive at the Space Science Engineering Center at the University of Wisconsin-Madison. An image from 2001 EST is presented in figure 3. The GOES-16 infrared brightness temperatures around the accident location varied between 16°C and 19°C , the former of which, when considering the HRRR model sounding, corresponded to cloud top heights of about 3,100 feet.

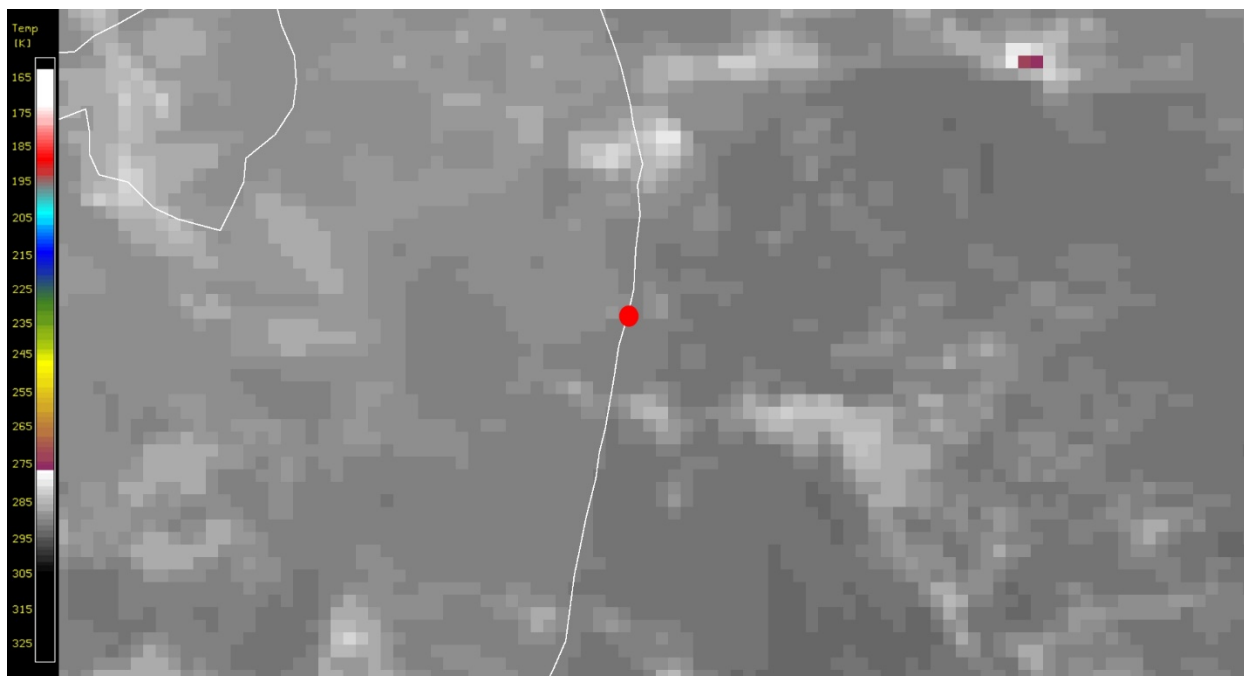


Figure 3 – GOES-16 infrared brightness temperature imagery from 2001 EST. Accident location is denoted by the red circle. This image has not been corrected for any parallax error.

5.0 Pilot Reports

There was only one publicly longline-disseminated pilot report⁴ (PIREP) made within an hour of the accident time and 20 miles of the accident location. That PIREP indicated that at 1930 EST a Cessna Citation Latitude aircraft located 3 miles away on the 100° radial from the Palm Beach VORTAC at 2,000 feet reported scattered clouds at 1,700 feet.

PBI UA /OV PBI100003/TM 0030/FL020/TP C68A/SK SCT017

6.0 Astronomical

At the location of the accident, for an observer at sea-level, sunset occurred at 1757 EST and civil twilight ended at 1821 EST. Moonrise occurred at 1509 EST and moonset occurred at 0430 EST on January 25, 2021. At the time of the accident, the moon was located at an altitude of 42.28° and an azimuth of 278.50° with 87.1 percent of its disk illuminated.

⁴ These do not include pilot reports only broadcast via radio.

Submitted by:

Mike Richards
Senior Meteorologist