

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



ERA24FA069

METEOROLOGY

Specialist's Factual Report

December 28, 2023

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A. ACCIDENT

Location: Hammonton, New Jersey

Date: 19 December 2023

Time: 2004 eastern standard time (0104 UTC¹ on 20 December 2023)

Aircraft: Type - Eurocopter AS350B2; Registration - N606HD

B. METEOROLOGY SPECIALIST

Mike Richards

Senior Meteorologist

Office of Aviation Safety

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 for 19 December 2023 (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: 39.713917° north latitude; 74.687567° west longitude at an elevation of about 35 feet.

This report provides information on weather conditions and forecasts applicable to the accident flight.

D. DETAILS OF THE INVESTIGATION

1.0 Surface Observations

An Automated Surface Observing Station (ASOS) was located at South Jersey Regional Airport (VAY²) in Mount Holly, New Jersey, which was located about 15 miles north-

¹ UTC - abbreviation for Coordinated Universal Time

² This report uses the 3-digit International Air Transport Association format for airport identification, which does not use the geographic designating digit (e.g., "K" for stations in the continental U.S. and "P" for U.S. stations in Alaska and the Pacific region) as found in the 4-digit International Civil Aviation Organization (ICAO) identifier format. Weather observations from airports in this report are referenced by their reporting station's identifier (using ICAO format that includes the geographic designating digit), not by the airport at which the reporting station is located.

northwest of the accident site at an elevation of about 50 feet. Automated longline³ reports from the VAY ASOS during the times surrounding the accident time are presented here.

[1854] KWAY 192354Z AUTO 33008KT CLR 02/M06 A3025 RMK AO2 SLP244
T00221061 10056 20022 53040 PWINO FZRANO \$

**[1954] KWAY 200054Z AUTO 33005KT CLR 01/M07 A3029 RMK AO2
SLP257 T00111067 PWINO FZRANO \$**

[2054] KWAY 200154Z AUTO 34006KT CLR 00/M07 A3032 RMK AO2 SLP267
T00001067 PWINO FZRANO \$

At 1954, the VAY ASOS reported a wind from 330° at 5 knots, sky clear, temperature of 1°C and dew point temperature of -7°C, altimeter setting of 30.29 inches of mercury; Remarks: automated station with a precipitation discriminator, sea level pressure of 1025.7 hectopascals (hPa), temperature of 1.1°C and dew point temperature of -6.7°C, precipitation identifier information not available, freezing rain information not available, maintenance needed on the system.

2.0 HRRR Model Sounding

A High-Resolution Rapid Refresh (HRRR) model⁴ sounding (Figure 1) for near the accident site⁵ at 2000 with an elevation of 46 feet was retrieved from the National Oceanic and Atmospheric Administration's (NOAA) Air Resources Laboratory and analyzed by the RAwinsonde OBservation (RAOB) program. RAOB identified the atmosphere below 15,000 feet as cloud free except for a shallow layer of few clouds noted near 4,200 feet. The freezing level was at about 900 feet. The wind near the surface was from the northwest at about 5 knots and veered⁶ and increased in magnitude to a north wind of about 30 knots near 5,000 feet. Above this level up through 10,000 feet the wind remained northerly to north-northwesterly at magnitudes between about 25 to 30 knots.

³ "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.

⁴ 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.

⁵ Coordinates used for the model were latitude: 39.74°N; longitude: 74.72°W.

⁶ A veering wind's wind barbs turn clockwise with increasing height.

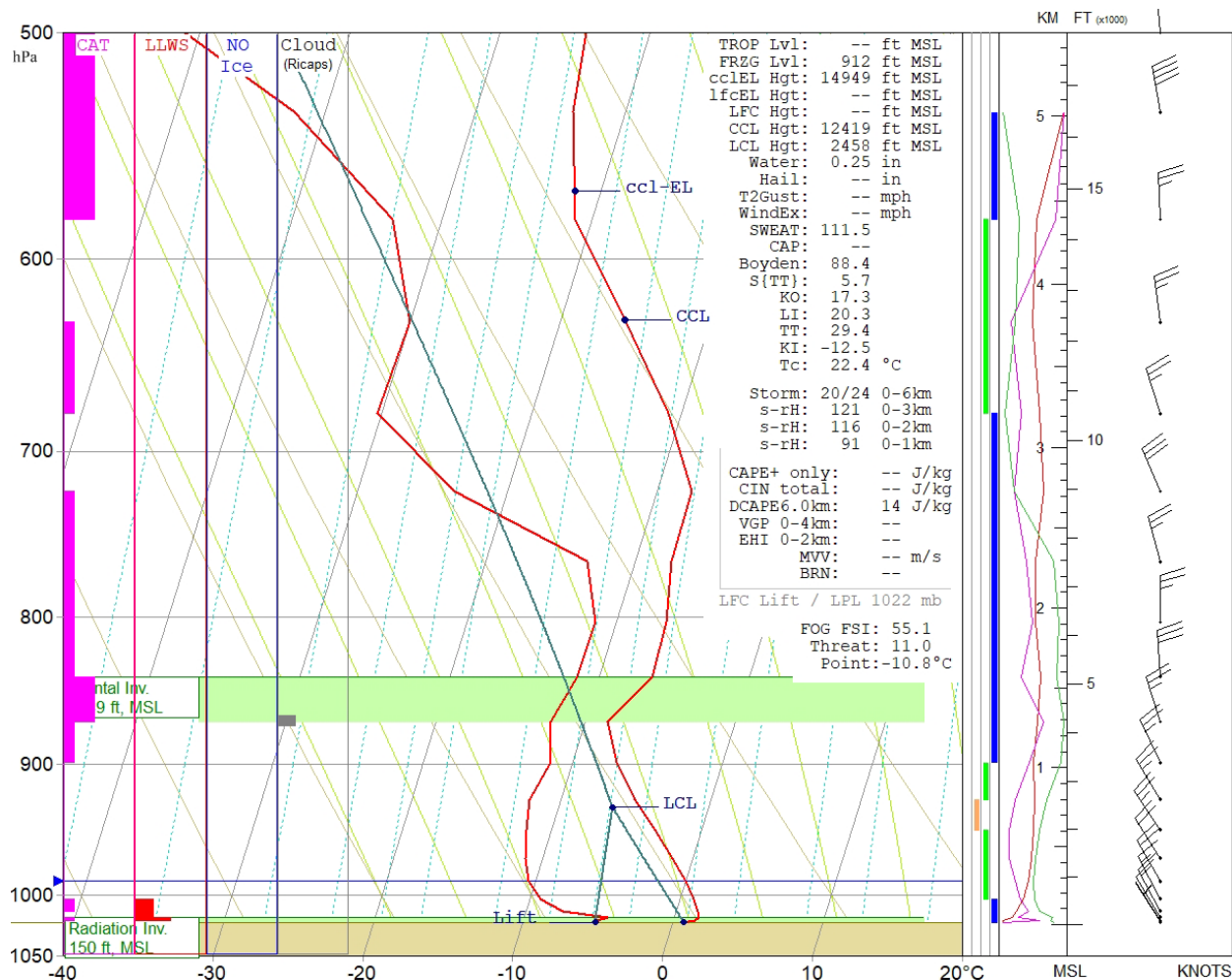


Figure 1 - HRRR model sounding data in SkewT/LogP format for 2000 near the accident site, surface to 500 hPa.

3.0 Satellite Imagery

Geostationary Operational Environmental Satellite (GOES)-16 infrared (10.3 μ m) data were obtained from an archive at the Space Science Engineering Center at the University of Wisconsin-Madison. An imagery of these data is presented in Figure 2. Brightness temperatures over the accident location were about -1°C, which, when considering the 2000 HRRR sounding, corresponded to a height of about 1,200 feet. However, due to the temperature inversion near the surface, -1°C was also very close to the temperature nearest the surface.

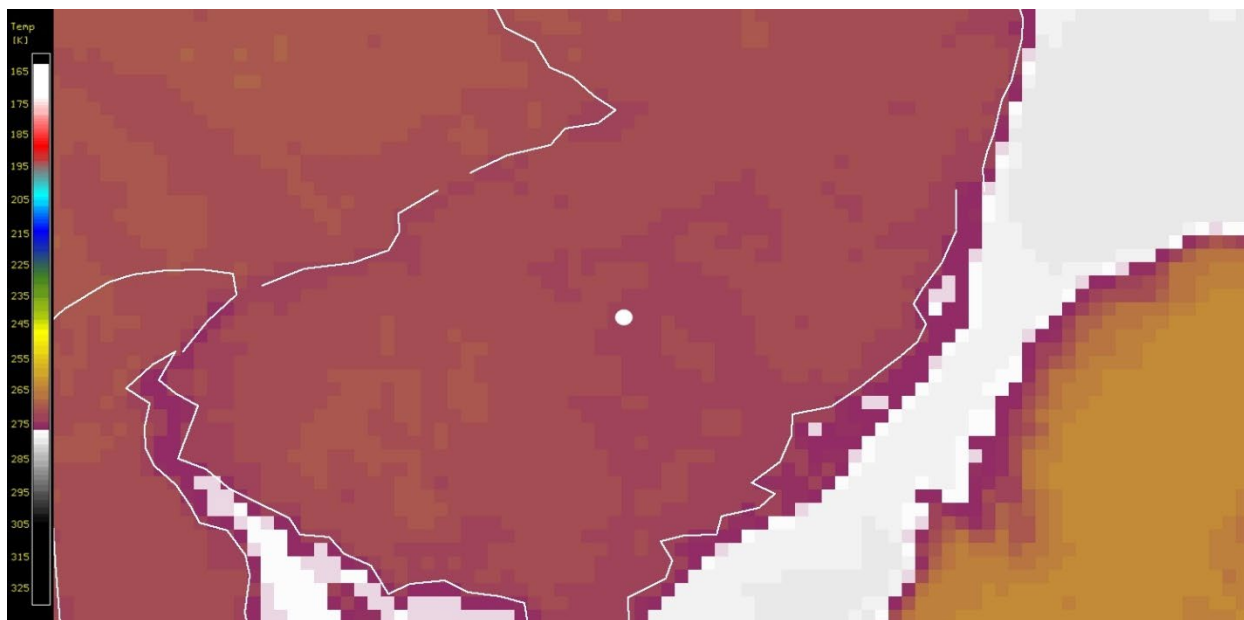


Figure 2 - GOES-16 infrared imagery from 2006. Image is not corrected for parallax error. The accident location is denoted by the white dot.

4.0 Weather Radar

A review of the WSR-88D⁷ Level-II base reflectivity weather radar imagery from the Mount Holly site (KDIX) around the accident time did not reveal any pertinent meteorological echoes in the accident region.

5.0 Pilot Reports

There were no longline-disseminated pilot reports⁸ (PIREPs) reported between 1800 and 2200 within 50 miles of the accident location.

6.0 Area Forecast Discussion

At 1535 the National Weather Service's (NWS) Mount Holly Weather Forecast Office issued the following Aviation section of an Area Forecast Discussion.

⁷ Weather Surveillance Radar 88 Doppler (WSR-88D)

⁸ These do not include pilot reports only broadcast via radio.

FXUS61 KPHI 192035

AFDPHI

Area Forecast Discussion

National Weather Service Mount Holly NJ

335 PM EST Tue Dec 19 2023

.AVIATION /20Z TUESDAY THROUGH SUNDAY/...

The following discussion is for KPHL, KPNE, KTTN, KABE, KRDG, KILG, KMIV, KACY and surrounding areas.

Through 00Z...VFR ceilings will begin to scatter out after dusk. Northwest winds near 10-15 kts with gusts near 20-25 kts will also begin to diminish, High confidence.

Tonight...VFR and becoming SKC. Northwest winds near 5-10 kts. High confidence.

Wednesday...VFR with a few clouds developing. Northwest winds 5-10 kts. High confidence.

7.0 SIGMETs

There were no non-convective or Convective Significant Meteorological Information (SIGMET) advisories active for the accident region at the accident time.

8.0 CWSU Products

There were no Center Weather Advisories or Meteorological Impact Statements issued by the Center Weather Service Units (CWSU) at the Washington and New York Air Route Traffic Control Centers that were active for the accident region at the accident time.

9.0 G-AIRMETs

A Graphical-Airmen's Meteorological Information (G-AIRMET) is a graphical advisory of weather that may be hazardous to aircraft but are less severe than SIGMETs. They are only valid at specific time "snapshots". G-AIRMETs are issued at discrete times three hours apart for a period of up to 12 hours into the future (i.e., 00-, 03-, 06-, 09- and 12-hour forecasts). They are issued at 0300 UTC, 0900 UTC, 1500 UTC and 2100 UTC (with updates issued as necessary).

At about 1600, G-AIRMETs were issued for moderate icing for between the freezing level and 8,000 feet that were valid at both 1900 and 2200 for regions that included the accident location.

10.0 Graphical Forecasts for Aviation

The Graphical Forecasts for Aviation (GFA) are intended to provide the necessary aviation weather information to give users a complete picture of the weather that might impact flight in the continental United States. The GFAs are available through the Aviation Weather Center's (AWC) website and provide hourly analyses and forecasts, including information on clouds, flight category, precipitation, icing, turbulence, wind, and other output from the NWS. The following information was retrieved from the AWC's GFA archive.

Figure 3 presents the GFA cloud cover analysis for 2000. It depicted few to scattered clouds at 4,500 feet around the accident location.

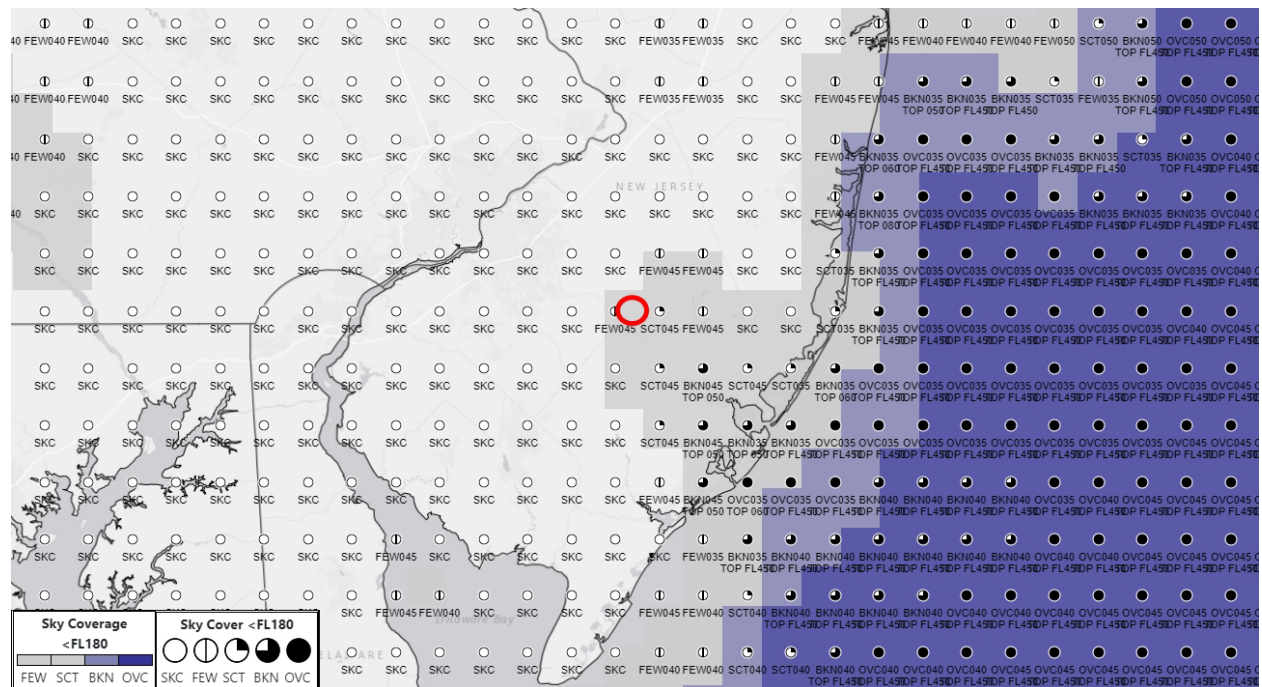


Figure 3 - GFA cloud cover analysis for 2000. The accident location is located near the red circle.

11.0 Lunar Data

According to [mooncalc.org](https://www.mooncalc.org/)⁹, on the accident day and relative to a point¹⁰ located about two miles from the accident location, moonrise occurred at 1209 and at the time of the accident the moon was at an azimuth and altitude of 219° and 41°, respectively, with 53 percent of its disk illuminated. Moonset occurred about 2359.

Submitted by:

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⁹ <https://www.mooncalc.org/>

¹⁰ Lunar calculations were for latitude: 39.7422°N; longitude: 74.7226°W