NTSB | National Transportation Safety Board

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Subject: WPR22FA266, Airspeed Computations

A specialist from the NTSB's Office of Research and Engineering, Vehicle Performance division, utilized DANTE software to calculate estimated airspeeds for the accident airplane. The airspeeds were determined using Automatic Dependent Surveillance – Broadcast (ADS-B) radar data and atmospheric conditions at the time of the accident.

According to the weather factual report produced by the NTSB's Office of Aviation Safety, "A High-Resolution Rapid Refresh (HRRR) model sounding was created for the approximate accident site coordinates for 0900 CDT. The 0900 CDT HRRR sounding wind profile indicated a near surface wind from 132° at 11 knots with the wind veering to the west through 15,000 ft. The wind speed remained below 20 knots under 20,000 ft. At the airplane's altitude before descent, near 12,700 ft, the temperature was 3.7°C and a dew point temperature of 1.6°C, with a relative humidity of 86%, a wind from about 210° at 4 knots."

The following figures represent calibrated airspeeds computed using winds of 132° at 11 knots and 210° at 4 knots. Figure 1 represents the time of the flight between 0820 and 0840 central daylight time (CDT). Figure 2 represents the time of the flight between 0838:20 and 0839:00 central daylight time (CDT). Figure 2 also shows the reported never exceed indicated airspeed (V_{NE}). Indicated and calibrated airspeeds should be within a few knots of each other.

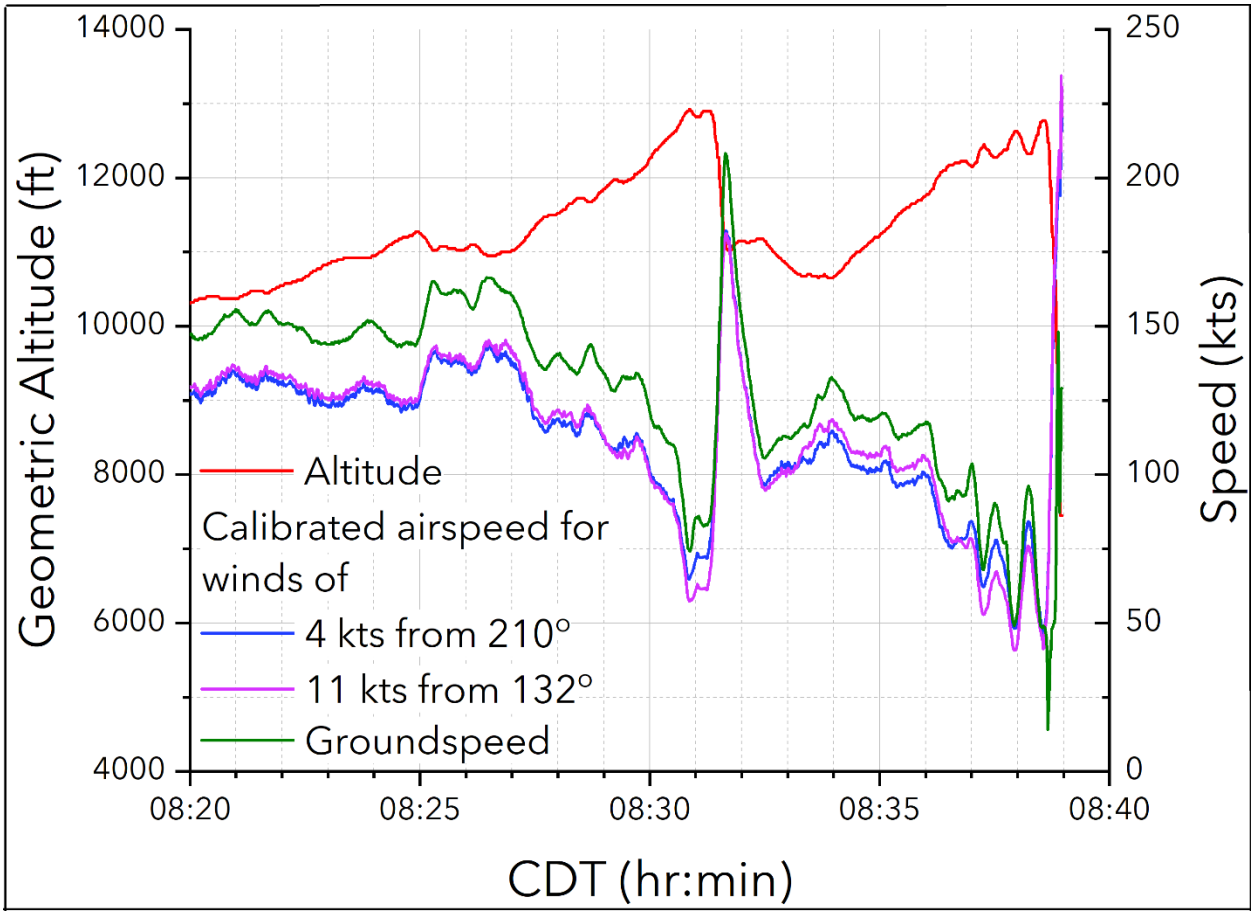
14000
12000
10000
8000
6000
4000
Geometric Altitude (ft)
250
200
150
100
50
0
Speed (kts)
08:20
08:25
08:30
08:35
08:40
CDT (hr:min)
Altitude
Calibrated airspeed for winds of
4 kts from 210°
11 kts from 132°
Groundspeed

Figure 1

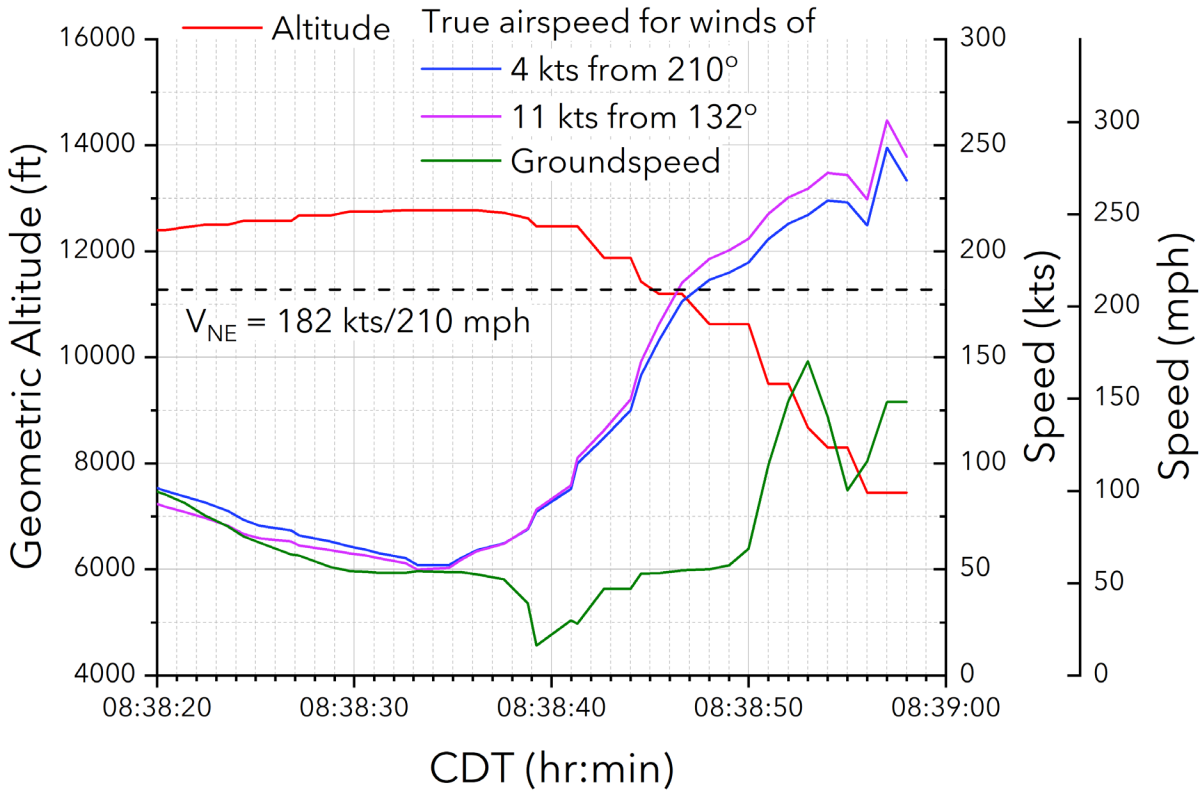
Altitude
True airspeed for winds of
4 kts from 210°
11 kts from 132°
Groundspeed
V_{NE} = 182 kts/210 mph
Geometric Altitude (ft)
16000
14000
12000
10000
8000
6000
4000
Speed (kts)
300
250
200
150
100
50
0
Speed (mph)
300
250
200
150
100
50
0
08:38:20
08:38:30
08:38:40
08:38:50
08:39:00
CDT (hr:min)

Figure 2