

National Transportation Safety Board
Office of Research and Engineering
Washington, D.C. 20594

Performance Study

Specialist Report
Marie Moler

A. ACCIDENT

Location: Danbury, Connecticut
Date: August 21, 2015
Time: 1420 EDT
Airplane: ECLIPSE AVIATION CORP EA500, N120EA
NTSB Number: ERA15LA322

B. GROUP

No vehicle performance group was formed.

C. SUMMARY

On August 21, 2015, about 1420 eastern daylight time, an Eclipse Aviation Corporation EA500, N120EA, sustained substantial damage during a runway overrun while landing at Danbury Municipal Airport (DXR), Danbury, Connecticut. The certificated airline transport pilot and two passengers sustained minor injuries. Day visual meteorological conditions prevailed and an instrument flight rules flight plan had been filed for the personal flight. The flight was conducted under the provisions of Title 14 Code of Federal Regulations Part 91. The flight originated from Wittman Regional Airport (OSH), Oshkosh, Wisconsin, around 1220.

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PERFORMANCE STUDY

Data for this performance study comes from an Eclipse Aviation Diagnostic Storage Unit. This unit recorded time, altitude, body accelerations, roll, pitch, heading, speeds, engine parameters, flap position, and landing gear weight on wheels. Longitude and latitude were not recorded parameters. Data from prior flights were also available from the Storage Unit and the accident landing was compared to four prior landings.

In the accident landing, the airplane touched down at an airspeed of 88 kts and a groundspeed of 90 kts (Figure 1). Recorder time at touchdown was 65926 seconds. The airplane left the paved surface of the runway at 65947 s. The groundspeed slowed to zero by 65952 s.

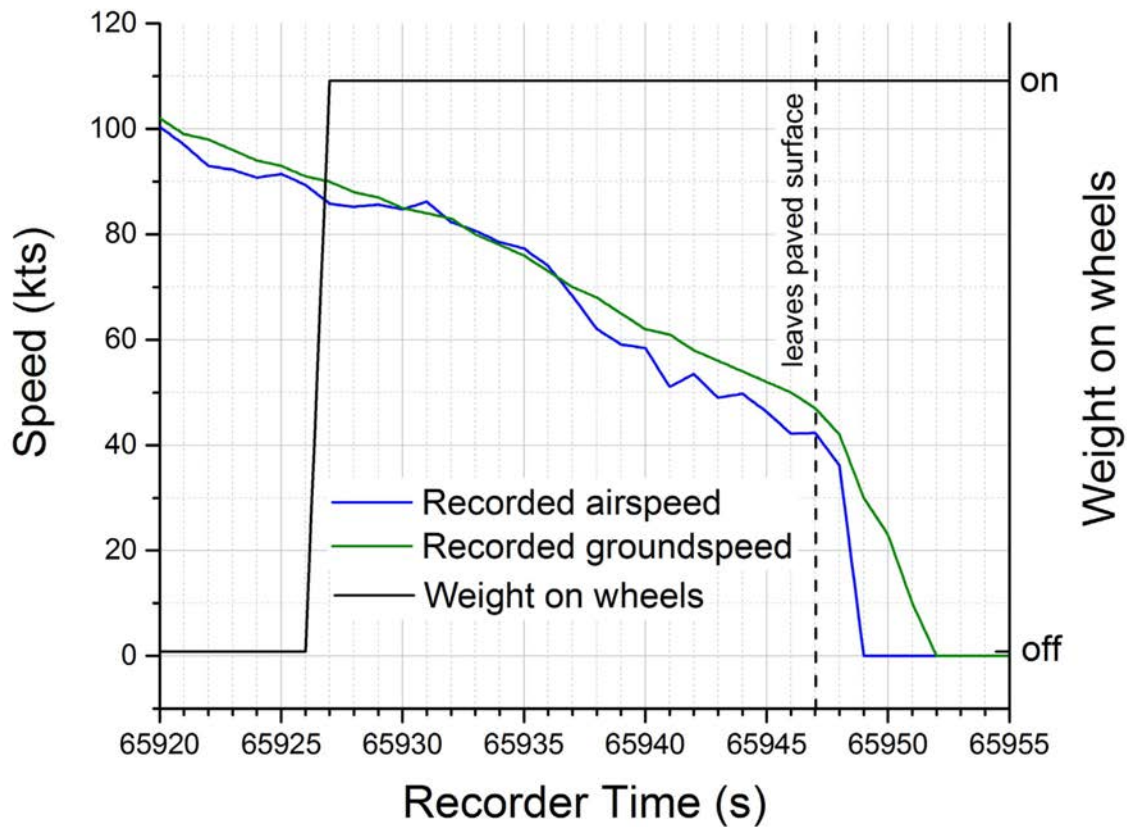


Figure 1. Recorded speeds and weight on wheels versus time.

Recorded groundspeed was integrated with respect to time to determine the distance traveled between when the aircraft came to a stop and touchdown. Figure 2 shows the calculated distance traveled by the airplane. Weight on wheels occurred about 2600 ft from the final resting point of the airplane.

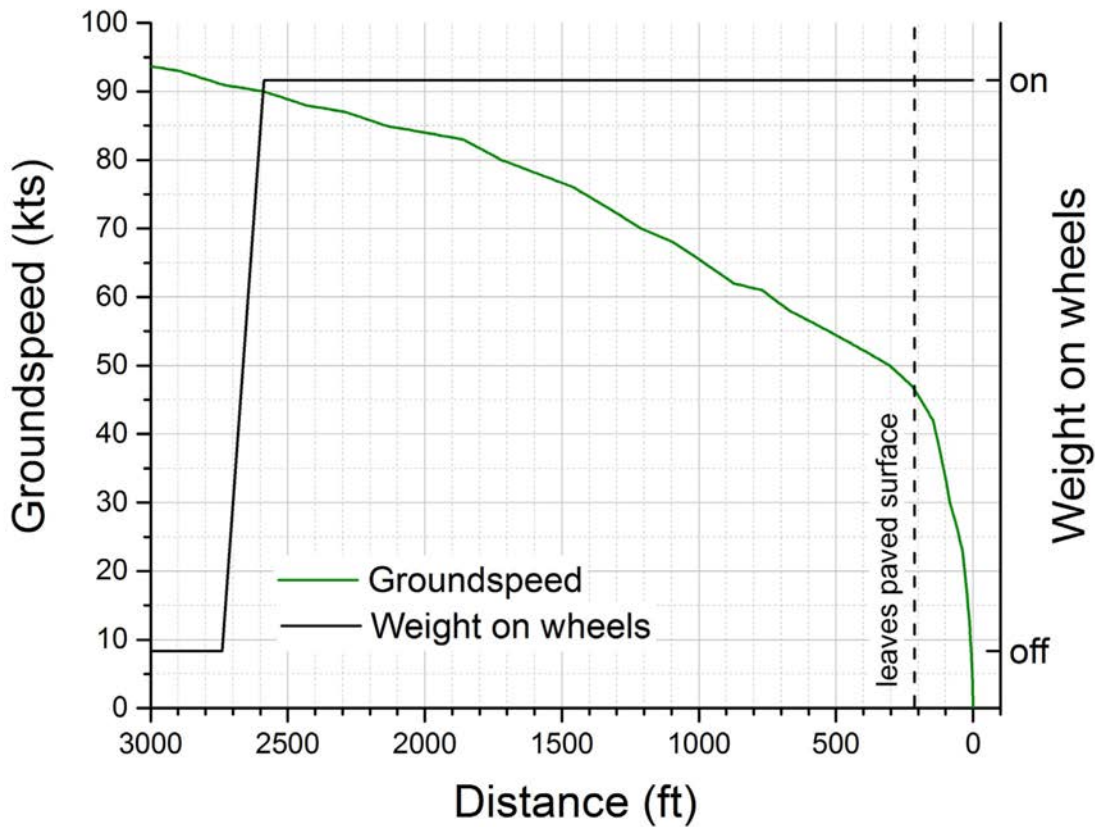


Figure 2. Groundspeed and weight on wheels versus integrated distance traveled.

Figure 3 shows the Danbury Municipal Airport and a red line 2,600 ft long extending from the aircraft’s final location to a point on the runway corresponding with weight on wheels. Runway 26 is 3,680 from the displaced threshold to the end of the paved surface¹. The airplane touched down about 1,280 ft from the displaced threshold of runway 26². The distance from the touchdown point to the end of the paved surface was about 2,400 ft.

¹ Runway 26/7 is 4,422 ft long of paved surface.

² About 2,000 ft from the beginning of the paved surface of Runway 26.

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Figure 3. Groundspeed and weight on wheels versus integrated distance traveled.

The groundspeeds from four prior landings are shown in Figure 4 along with the accident landing. The accident landing's touchdown groundspeed was 91 kts while the four prior landings touchdown speeds were between 73 and 79 kts.

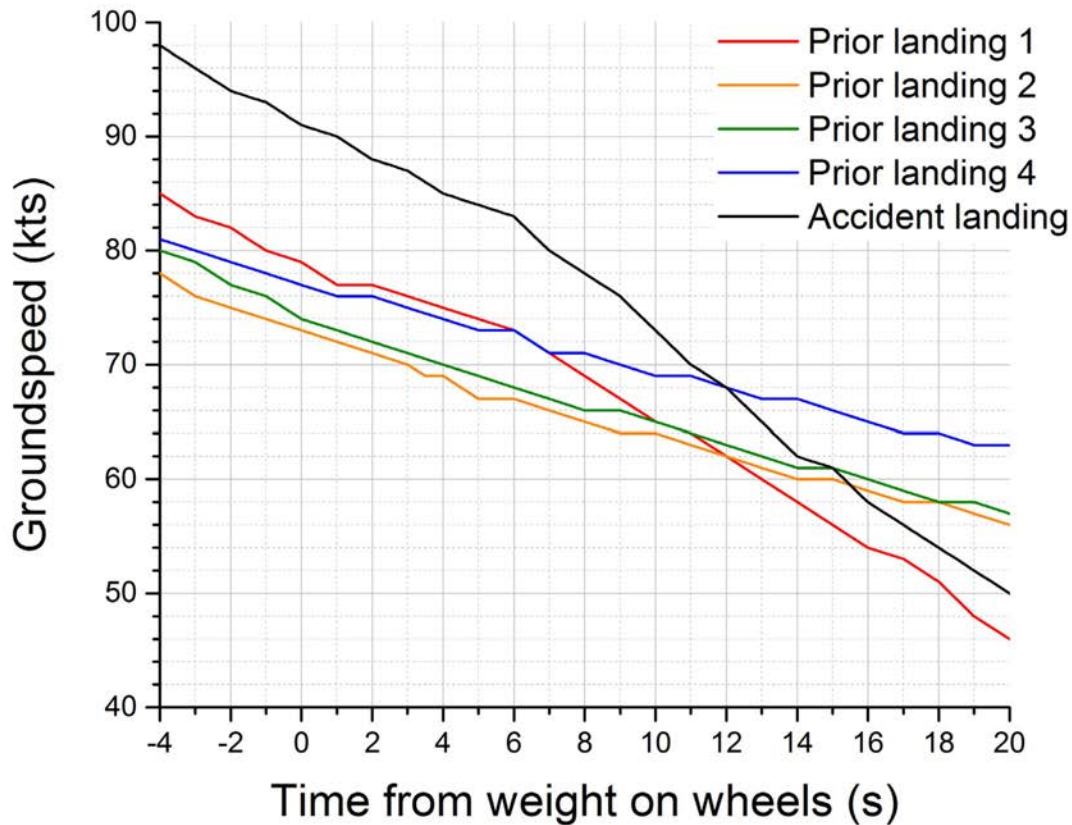


Figure 4. Groundspeed versus time for the accident landing and four prior landings.

The accident landing's deceleration rate was 2.2 kts/s (0.12 g's) for the first 20 s after touchdown, all of which was on the paved runway surface. Prior landing 1's deceleration rate was 1.7 kts/s (0.09 g's) and the average deceleration rate for prior landings 2, 3, and 4 was 0.8 kts/s (0.04 g's). This indicates that at the time of the accident, the airplane's braking systems were working as well as or better than they were during the prior four landings.

D. CONCLUSIONS

Integration of the airplane's recorded groundspeed indicates that it touched down 1,280 ft from the threshold of Runway 26 and traveled 2,600 ft before coming to a stop. The aircraft touched down at a groundspeed of 91 kts and decelerated at a rate of 2.2 kts/s (0.12 g's). The touch down speed was 12 to 18 kts faster than the reviewed prior landings. The deceleration rate was higher than the prior landings, indicating the brakes were working as well or better than in the earlier landings.

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