Cawthra Joshua

From: [redacted]
Sent: Friday, December 21, 2012 7:12 AM
To: Cawthra Joshua
Subject: RE: WPR11FA236 - Phenom 100 N224MD in Sedona, AZ
Attachments: Page_AFM_5-20.jpg; Page_AFM_5-25.jpg; AFM - REV 9 - Opera applicability.pdf

Follow Up Flag: Follow up
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Categories: Red Category

Hi Josh,

The CVDR indicates that the aircraft performed the approach using flaps 3 (26 degrees deflection), and had a grossweight of 9,128 lbs (4,140 kg). No anti-ice or de-ice system was activated during landing.

According to AFM section 5 (Performance), **the reference speed (Vref)** for the above conditions is **104 knots**. Please see extract from the AFM below (file "Page_AFM_5-20.jpg"):

Remark: Embraer recommends not to interpolate between two given values in the tables, but to assume the closest value leading to a conservative result. Therefore, the line corresponding to 9,500 lbs was chosen because it is the upper closest number to the actual value of 9,128 lbs.

Still according to AFM section 5, considering the conditions mentioned before and a 5,000 ft elevation aerodrome and 0 knots wind, which is the closest conservative option available to the 3 knots headwind, the **unfactored landing distance is 3,112 feet**. Please see extract from the AFM below (file "Page_AFM_5-25.jpg"):

This calculation **does not take into account the Vref overspeed**. Based on the CVDR, the aircraft crossed 50 ft AGL at 22:54:00 GMT with 124.5 kts of indicated airspeed.

The Vref and landing distance can also be obtained using the performance software Opera, which is a certified software. Opera permits more flexible inputs than those available in the AFM tables and therefore gives more accurate results.

According to the AFM, the Opera 4.1 was the applicable version for that aircraft at the time of the event, as the SB 500-27-0003 was incorporated on September, 2010, according to Embraer control (for convenience, please refer to file "AFM - REV 9 - Opera applicability.pdf"):

The input parameters used in the calculation were:
- Aircraft Weight = 4,140 kg or 9,128 lbs (according to CVDR parameter);
- Flaps 3 (which has the same deflection as the flap 2 setting – 26 degrees);
- Anti-ice: off (according to CVDR parameter);
- QNH = 30.04 inHg (value presented in METAR);
- Runway slope of -1.9% (according to airport diagram);
- Airfield elevation = 4,830 ft (according to airport diagram);
- OAT = 82.4 F (equivalent to 28 C presented in METAR);
- Dry runway.

Calculation of the **reference speed (Vref)** resulted in **101.5 knots IAS**.
The **unfactored landing distance** required, calculated by Opera for a **3.5 knots headwing and <u>including the Vref overspeed of 23 knots</u> is 5,624 feet (1,714 meters).**

Remark: Currently, the applicable software for this aircraft would be Opera 7.1. Calculation with this version, with the same considerations, results in 5,315 ft.

Please let me know if you have any question.

Thank you.

Happy Holidays!

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