



NTSB MEMORANDUM FOR RECORD

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National Transportation Safety Board

Date: October 3, 2019
Person Contacted: Wael El-Sadi, Group Leader Engineering (CAE Aviation)
NTSB Accident Number: WPR19FA230

Narrative:

The following memorandum contains the email responses from the Group Leader Engineering (CAE Aviation) with CAE Aviation, Dallas, Texas:

The operations group chairman requested the following items be addressed:

For the Excel simulator that was used by Mr. CORY LOMBARD for his initial training (Mike, I believe you know which one it was), can you report how the parking brake fidelity works in the sim? For example, is it programmed to be an on/ off setting, or does it have a varying level setting, depending upon toe brake pressure applied by the pilot. Follow on question, in the sim, if the parking brake handle is pulled, will the aircraft move at any power setting?

Lastly, can you confirm that the parking brake in the simulator used for the initial training does not have any annunciator associated with its position, and it is not incorporated into the No Takeoff Configuration Warning.

Mr. El-Sadi's response:

Here are the answers to the questions you asked:

Brake/parking brake system description:

The parking brake in the CE-560XL airplane acts as an on/off shutoff valve between the brakes and normal sources of pressure (power or manual braking from the pedals). When the parking brake is activated, brake pressure is locked and will remain at whatever pressure was applied by the pedals before pulling the handle. The only exception is that when the emergency brakes are activated more pressure can be added. In normal situations pulling the parking brake will hold the same pressure that was applied to the



NTSB MEMORANDUM FOR RECORD

pedals, which can vary from zero brake pressure to the maximum available from the power brake pump. While the parking brake is activated, the pedals are disconnected from the system and can't be used to apply additional pressure.

Simulator: (1. & 2.)

Our CE-560XL full-flight simulator replicates the above characteristics. In our simulator, if the parking brake is activated with maximum braking pressure, the simulator will hold position under maximum thrust on a dry or wet runway. At approximately 50% of full brake pressure on a dry runway it will accelerate and can achieve V1/VR speeds. Deceleration from takeoff speed with the parking brake will be difficult because the pedals won't function until the parking brake is released.

Annunciators: (3.)

In the CE-560XL airplane, there is no cockpit indication that the parking brake is engaged other than handle position, and it is not incorporated into the takeoff config warning. Again, our simulator replicates these airplane characteristics the same.

We confirm that the simulator does not have an annunciator associated with the parking brake nor is the parking brake incorporated into the No Takeoff Configuration Warning.