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InFO

Information for Operators

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An InFO contains valuable information for operators that should help them meet certain administrative, regulatory, or operational requirements with relatively low urgency or impact on safety.

Subject: Use of Windshear Models in Federal Aviation Administration (FAA) Qualified Flight Simulation Training Devices (FSTD)

Purpose: This InFO provides recommendations to FSTD sponsors and operators and informs instructors and other users of FSTDs on the use and proper set up of windshear models used in training.

Background: The July 6, 2011 final report of the Stick Pusher and Adverse Weather Event Training Aviation Rulemaking Committee (SPAW ARC)¹, made several recommendations to the FAA. One recommendation was to improve microburst and windshear training by enhancing FSTD instructor operating stations (IOS) to ensure windshear models are properly configured for use. Specifically, the SPAW ARC recommended that all required windshear models be selectable and clearly labeled on the IOS. The SPAW ARC determined that the labeling of available windshear models is not standardized in an FSTD and instructors may lack the necessary information to ensure that the windshear recognition cues in a particular training scenario will occur as desired. The Air Carrier Training (ACT) ARC has recently reviewed the SPAW ARC report and concurred with the finding. However, the ACT ARC recommended an education/awareness solution instead of a technology solution. The FAA has accepted the ACT ARC recommendation and developed this InFO.

Discussion: The Title 14 of the Code of Federal Regulations (14 CFR) part 60 FSTD qualification standards require a minimum set of windshear models to be available to instructors for certain airplanes as defined in 14 CFR part 121, § 121.358². These models must be available to the instructor for the following critical phases of flight:

- Prior to takeoff rotation;
- At liftoff;
- During initial climb; and
- On final approach, below 500 feet above ground level.

¹ The SPAW ARC was chartered as a result of the requirements of the Airline Safety and Federal Aviation Administration Extension Act of 2010, Public Law 111-216, Section 208. The final report can be viewed at the following Web site: http://www.faa.gov/regulations_policies/rulemaking/committees/documents/media/spawet.arc.rr.20110706.pdf

² See Table A1A, entry 2.e.; Table A2A, entry 2.g.; and Attachment 5 to Appendix A to Part 60. Though windshear qualification is only required for FSTDs of aircraft typically used in part 121 training, many training providers voluntarily qualify their FSTDs to use the windshear training models for training conducted outside of part 121.

The data sources and implementation of the windshear models must meet certain requirements as defined in part 60. The vast majority of currently qualified FSTDs use the guidance in the Windshear Training Aid³ to develop and implement windshear models for training. As part of the FAA FSTD evaluation process, the windshear models qualified by the FAA are objectively assessed to determine that the models have been properly tuned to provide the cues necessary for recognizing windshear onset and potential performance degradation requiring the pilot to initiate recovery procedures. The Windshear Training Aid provides detailed guidance on how to implement and tune these windshear models in an FSTD to provide the proper recognition cues needed for training. These models are tuned for the particular FSTD/airplane configuration using “wind factor” multipliers and other adjustments that account for the following conditions:

- Thrust to weight ratio of the airplane;
- Ambient conditions;
- Runway length (prior to takeoff rotation exercise); and
- Pilot subjective assessment.

It is important to note that in order to achieve repeatable results in training, the FSTD must generally be configured in the same conditions in which the windshear model was originally tuned. Simply selecting a windshear model from the IOS may not ensure the FSTD has been properly configured to reproduce the desired windshear training scenario.

Recommended Action: All sponsors and operators, of FSTDs qualified by the FAA for windshear training, are encouraged to provide instructors and other FSTD users with training on the proper method to configure an FSTD for all windshear models available on the IOS. To enhance the overall training environment and to provide consistent results in training, the implementation of a preset button on the IOS that automatically sets the correct airplane configuration and ambient conditions for a selected windshear model is highly recommended. Alternatively, where such presets cannot be implemented on the IOS, guidance material should be provided to the instructor on or near the IOS that describes how to manually configure the FSTD for each selectable windshear model.

Contact: Questions or comments regarding this InFO should be directed to the Air Transportation Division, AFS-200, at (202) 267-8166.

³ Windshear Training Aid, U.S. Department of Transportation, Federal Aviation Administration (1987).