

The Effect on Liability for Using Non-OEM Datasets in Flight Simulation Training Devices

Introduction

This paper addresses a growing concern that software based on non-OEM datasets used in flight simulators to train pilots to recover from stalls may increase liability for accidents caused by lack of pilot training. An examination of tort liability reveals that this is not the case, so long as the software used in flight simulation training devices (“FSTDs”) meets the strict compliance standards for upset prevention and recovery training (“UPRT”) established by the FAA.

Changes to the FAA’s Requirements for FSTDs in Training Pilots in Stall Recovery

On March 30, 2016, the FAA released a new final rule, amending the Qualification Performance Standards for FSTDs used in training pilots to recognize and react to aircraft stall situations in order to mitigate aircraft loss of control accidents.¹ Based on the analysis of several accidents caused by stalls, the new rule requires FSTDs to meet new, rigorous standards to train pilots with the correct maneuvers to right an aircraft in stall.

Flight simulators are aircraft-specific. The datasets used to replicate real-world, physics-based scenarios inside the simulator are generally licensed at great expense from the original equipment manufacturer, but the FAA rule states that stall models that are developed by third party data sources and thoroughly evaluated by a SME pilot can be effectively used to support stall training tasks in a simulator.² Specifically, the rule states that non-OEM sources of aerodynamic data *must* be considered for the following reasons:

- 1) Restricting the development of stall models to that of the airplane manufacturers could pose a high cost on the FSTD sponsors and may not be possible in some instances where the airplane manufacturer does not support a simulator data package or it is no longer in existence;
- 2) Recommendations by the SPAW ARC, ICATEE, and other working groups have supported the use of analytically developed “type representative” stall models for training purposes; and
- 3) An FAA simulator study has supported the SPAW ARC’s findings and found that analytically derived “type representative” stall models that are developed by third party data sources and thoroughly evaluated by a SME pilot can be effectively used to support stall training tasks in a simulator.³

Thus, the FAA has set strict qualification standards for FSTDs, regardless of the datasets they are based on. By doing so, they have set the legal standard of care that must be breached before liability can be found.

Liability Should not be Found if FSTDs Adhere to the FAA’s New Rule

Liability for the use of non-OEM datasets would likely arise under a tort theory of negligence. Plaintiffs claiming liability for a negligent act under a theory of negligence must establish four elements: a duty, a breach of

¹ Flight Simulation Training Device Qualification Standards for Extended Envelope and Adverse Weather Event Training Tasks, 81 FR 18178-01.

² *Id.*

³ *Id.*

that duty, and some injury or damage directly and proximately caused by the breach of that duty.⁴ As this paper contemplates liability, damage to property or physical injury will be assumed. Likewise, it is assumed that the plaintiff has claimed that the cause of the damage was the use of non-OEM data sets in the FSTDs used during pilot training. The element of concern for liability, then, will be duty.

In any legal claim for damages that turns on the use of non-OEM datasets in FSTDs used for stall recognition and recovery, the FAA's new qualification standards establish the duty owed to a plaintiff.⁵ Failure to meet such governmental safety standards is a powerful way for a plaintiff to show breach of the duty of care.⁶ Indeed, the doctrine of negligence *per se* may make any violation of governmental standards sufficient to establish that a defendant's conduct fell below the reasonable standard of care.⁷

The threshold issue of "duty," and a departure from it, is the central issue in any negligence action. Thus, any potential legal battle will be over the FAA's performance standard.⁸ The more detailed the performance standard, the more powerful adherence to it will be as a defense in the negligence action.⁹ The more the vendor has deviated from the performance standard, the greater the likelihood of liability.¹⁰ Because the FAA's recent rule establishes enhanced qualification standards for FSTDs used in stall recognition and recovery training, legal liability should only be found where these guidelines have been violated.

Bihrlé's StallBox Provides a Non-OEM Solution for Flight Simulator UPRT

Bihrlé Applied Research, Inc. ("BAR") is an aeronautical research and development company specializing in the development of flight-representative software math models for commercial and military fixed-wing and rotary-wing aircraft, including full-envelope modeling and aircraft upset recovery modeling. BAR's StallBox is designed as a cost-effective solution for providing UPRT capabilities in existing simulators without requiring OEM datasets and meets all ICAO and FAA recommendations.

Conclusion

Liability should not pass to a vendor utilizing a FSTD based on non-OEM datasets. Instead, analysis of tort law reveals that the FAA guidelines for FSTDs for stall recognition and stall will establish the required standard of care by which liability will be judged. As long as FSTDs are shown to meet the FAA's new qualification standards, there cannot be a breach of that duty, and thus, a negligence action will fail. Use of BAR's StallBox, which meets the FAA requirements for FSTDs utilized in stall recognition and recovery training, should not increase liability exposure.

⁴ *Avemco Ins. V. Elliot Aviation Flight Serv.*, 86 F.Supp 2d 824, 829.

⁵ RESTATEMENT (SECOND) OF TORTS § 285 (1965) ("The standard of conduct of a reasonable man may be . . . established by a legislative enactment or administrative regulation.").

⁶ Henry H. Perritt & Albert J. Plawinski, *Making Civilian Drones Safe: Performance Standards, Self-Certification, and Post-Sale Data Collection*, 14 Nw. J. Tech. & Intell. Prop. 1, 33 (2016) (citing RESTATEMENT (THIRD) OF TORTS: PHYS. & EMOT. HARM § 14 (2010) ("An actor is negligent if, without excuse, the actor violates a statute that is designed to protect against the type of accident the actor's conduct causes, and if the accident victim is within the class of persons the statute is designed to protect."))

⁷ *Id.*

⁸ *Id.*

⁹ *Id.*

¹⁰ *Id.*