Hot Topic: Challenges for the Very Light Jet Industry

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The advent of very light jets (VLJs) is one of the most exciting developments in recent aviation history, both because of technology advances and the uses envisioned for these aircraft. However, despite what some marketing executive might have us believe, a VLJ is *not* simply a Cessna 172 on steroids. A VLJ has different systems and capabilities, operates in different flight regimes at significantly higher speeds, and places different demands upon its pilots, who will be highly diverse in previous flying experience. Safe operation will require innovative approaches to developing cockpit interfaces, training and operating procedures.

One segment of the VLJ market consists of pilots who want to step up into jets for personal flying. The pilots range from ex-military and retired airline captains to weekend flyers whose current airplane is a Baron. VLJ manufacturers, most of whom offer training as part of the purchase package, are starting to recognize that a "one size fits all" approach to training will not work. Yet many questions remain for how to customize training within the requirements of FAR 142 for standardized curriculum and schedule.

Single-pilot Resource Management (SRM) training is needed, analogous to Crew Resource Management (CRM) that has become a mainstay of airline training. Although this need is recognized by some in the industry, little is yet available in the way of detailed SRM curricula. We suggest that SRM must be qualitatively different from CRM; the emphasis must shift from crew coordination and communication to flight planning, decision-making, and—especially—workload management. Lacking other crewmembers to share tasks, the single pilot requires specific techniques for juggling concurrent task demands.

VLJ cockpits provide advanced and integrated avionics, autoflight, and systems (e.g., FADEC) that in some ways will make VLJs easier to fly than, say, a typical light twin. But advanced automation is a double-edged sword, for using it is a highly cognitive endeavor. Pilots who are not current and highly proficient in the automation can easily fall into automation traps.

Air taxi operators (part 135) will also face special challenges. The airline industry is experiencing a boom in pilot demand, forcing even large regional carriers to hire low-time pilots and promote them to the left seat fairly quickly. Air taxi operators will have to compete in this market for pilots. The industry needs innovative approaches to training low-time pilots transitioning from small piston aircraft to jet in decision-making skills that traditionally evolved over many years under the tutelage of highly experienced captains.

These and related issues are explored in depth in two new articles recently posted on this site: "Training the VLJ Pilot" (**http://humansystems.arc.nasa.gov/flightcognition/Publications/Burian&DismukesVLJTrain07.pdf**) and "Alone at 41,000 Feet" (**http://humansystems.arc.nasa.gov/flightcognition/Publications/asw_nov07_p30-34.pdf**). As always we welcome you reactions to these publications.