

Text of address given by Rusty Sachs to the FAA Annual Planning Conference, Washington, DC in March, 2007

### **Flight Training and GA Safety: Where Do We Need to Go?**

GA currently faces two very large and very different challenges. The first arises out of astounding progress in technology in the past ten years; the second results from the staggering number of pilots expected to seek new certification in the next ten years.

Let me address the issue of technologically advanced aircraft first, with a quick historical review. From the time Jimmy Doolittle first traveled point to point by reference to instruments until the twilight hours of the twentieth century, aircraft instruments were essentially unchanged. Instruments came in three varieties: large, medium, and small, and were invariably black, round, glass-faced, and based on analog read-outs. All instruments received their sensory input from either (a) the pitot-static system, (b) gyroscopes, (c) mechanical pressure, or (d) electrical or electronic sources.

When the first glass cockpit displays were designed, this began to change. No longer was it necessary for instrument indicators to be linked to gyroscopes – a centimeter-long laser beam replaced the gyro. With the new displays, engineers came up with the less-than-startling concept of creating displays that resembled the gauges everyone was familiar with. Instead of a three-inch metal disc with an altimeter in it, you got a brightly colored picture of a three-inch metal disc with an altimeter in it. Or a picture of a little round oil pressure gauge.

But some pioneering folks diverged from those displays. And I don't mean simply by having a square attitude indicator rather than a round one. Among the cleverest innovations in flight displays have been those initiated in heads-up displays in military aircraft. The concept of a linear vertical speed indicator, rather than one with a rotating dial, is very easily understood. Some new representations are much more intuitive than what is provided by the analog gauges we're familiar with. Think of the plan view of a holding pattern at a VOR intersection as displayed on a Garmin 530. Now compare that with the display for the same holding

pattern when using two VORs and two Course Deviation Indicators.

It nonetheless weighs heavily on the confusion of a transition pilot with thousands of practice approaches under her belt *the regular way* if she has to adapt to a display panel only vaguely resembling what she's familiar with, and here we discover a twofold problem. First: before flying with advanced avionics, every seasoned pilot must be retrained; second: retraining must continue as engineering innovations alter the design of individual components within the glass panel.

If we discard the pilots whose principal experience comes in Part 121 operations, the component of US pilot population trained on steam gauges approaches 100 per cent. Although most training programs for professional pilots, such as those at UND, Florida Tech, and Embry-Riddle, are now using complex avionics from the get-go, we face two decades of senior transition pilots before this generation becomes a majority in the cockpit. Bear in mind also that the vast preponderance of Part 91 pilots is composed of those with no intention ever to fly professionally, and enthusiasm to

transition to state-of-the-art avionics will be piecemeal at best.

The training of individuals who harbor *career incentive* is facilitated by the full-time nature of the training process. Future 121 pilots devote their life to the training, whereas Part 91 pilots generally fit the training into the framework of their lives. This latter method complicates the transition process, as training schedules inevitably vary from week to week and individual to individual.

The concept of partial panel instrument flying is also in transition. It was only a few years ago that the FAA ceased requiring maneuvers performed “with reference to needle-ball and airspeed indicators only,” in favor of the more contemporary “without use of attitude or heading indicators.” Glass panels are susceptible to significantly different breakdowns from steam gauges, and we should anticipate commensurate changes in Practical Test Standards, as loss of gyros becomes less a worry than loss of PFD integrity.

The challenge of training the enormous number of GA pilots outside the realm of Part 121 and Part 135 operations is

daunting. Few CFIs outside the academic training environment are currently capable of teaching and testing students in the sophisticated cockpit environment now readily available, and few Pilot Examiners are competent to determine the proficiency of pilots to use such environments. Our task as leaders of General Aviation is an exciting one.

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At the same time we face the challenge of training the pilot population to operate safely with 21<sup>st</sup> Century avionics and systems, we are confronted with the prospect of dozens of thousands of aviators of disparate experience seeking new certification as Sport Pilots between now and 2010. And this challenge is as much social as it is logistical.

I have been amazed at the number of incidents recounted where an individual asks the local flight school about Sport Pilot or Recreational Pilot training, only to be sent away by folks claiming that they train only those pilots seeking *real* qualifications.

Snobbism has no place in General Aviation. If your idea of heaven is flying a G-IV, you can't conclude that everyone

else aspires to something less, only to something different. We all have our own desires, and we all share the same sky. It's time we started helping each other, rather than competing for prestige. Every one of you is just one medical exam away from being a sport pilot. The new regs relating to sport pilots and light-sport aircraft create an entry level for pilots that can be reached in a shorter time, with less financial burden. They have reopened the doors to general aviation, doors that have been slowly creaking shut for more than a decade.

General Aviation faces two widely different challenges in this first decade of the 21<sup>st</sup> century – training an enormous pilot population in the proper use of increasingly complex avionics, and training a similar population to operate safely in basic aircraft within a complex airspace system. Are we up to the challenge? Certainly, as long as we groom ourselves and our peers with the crucial attitudes necessary to overcome the underlying risks.