About the Commentary: The Commentary addresses selected issues within the AVIATORS' MODEL CODE OF CONDUCT (AMCC) to elaborate on their meaning, provide interpretive guidance, and suggest ways of adopting the AMCC. It is intended primarily for implementers, policy administrators, aviation association management, and pilots who wish to explore the AMCC in greater depth. Please send your edits, errata, and comments to <PEB@secureav.com>. Terms of Use are available at <http://secureav.com/terms.pdf>.

COMMENTARY TO
AMCC III. General – *TRAINING AND PROFICIENCY*

Pilot training and pilot proficiency lie at the heart of aviation safety, simply because most accidents involve pilot error.[1] Effective training requires a sophisticated understanding of the nature of pilot error and the efficacy of various training methods.[2] As a result, GA flight training and flight testing are in constant flux, and the subject of considerable rethinking.[3]

"Training is the systematic modification of behavior through instruction, practice, measurement, and feedback. Its purpose is to teach the trainee to perform tasks not previously possible or to a level of skill or proficiency previously unattainable."[4] The compelling need for flight training was artfully urged long ago by Wolfgang Langewiesche:

> [F]lying *is* difficult to learn – let nobody tell you otherwise. The accident record proves it, and so does the number of men barred from flight training or eliminated from training for lack of aptitude. What makes flying so difficult is that the flier's instincts – that is, his most deeply established habits of mind and body – will tempt him to do exactly the wrong thing .
> . . . In learning the art of piloting, much carefully learned behavior, many firmly held ideas must be forgotten and cleared out of the way, must actually be reversed![5]

After mastering basic stick and rudder skills, the modern GA pilot often yearns to learn new, more complex skill-sets necessary for flying technically advanced aircraft in a challenging ATC environment. Human factors research in aviation indicates that "the increased importance of [learning] proper aeronautical decision-making (ADM) and risk assessment has never been greater."[6] AMCC III urges pilots to embrace such challenges as (a) achieving and maintaining proficiency, (b) participating in flight safety education, (c) responding to emergencies, and (d) accurately logging their currency.

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[1] NTSB, *Annual Review of Aircraft Accident Data, U.S. General Aviation, Calendar Year 2000,* NTSB/ARG-04/01 (Jun 17, 2004), *available at* < http://www.ntsb.gov/publictn/2004/ARG0401.pdf > (accident broad cause/factor 89% - personnel); AOPA Air Safety Foundation, *Accident Trends and Factors for 2003,* 2004 NALL REPORT, *available at* < http://www.aopa.org/asf/publications/03nall.pdf > (pilot related causes of accidents 75.8%).

[2] The extent of accidents caused by pilot error, the meaning of "error", and approaches to reduce error are mired in controversy. Consider the following views:

- "The industry persists in attempting to eliminate error and advocates prevention strategies aimed at error avoidance rather than error management . . . . [C]onsider human error as the starting point . . . . Error should be considered like a fever: an indication of illness rather than its cause. It is a marker announcing problems in the architecture of the aviation system. The obvious place to start looking is at the interfaces between human and system, including the various human-organization interfaces relevant to the event under scrutiny, to determine whether the interfaces are context-friendly." Capt. Daniel E. Maurino, ICAO, *Aviation Human Factors and the Safety Investigation Process,*

Conference of the Int'l Society of Air Safety Investigators, Anchorage, Alaska (Oct. 15, 1997), pp. 2, 6.

- "If flight instructors are responsible for pilots' ability to make the right decisions, then to blame pilot error for an incident would be unfair to a pilot without recognizing the chain of errors that likely inculpates that pilot's instructor, and in turn, the demographics that caused the instructor to have little experience." Interview with Frank Hofmann, Sec'y, Canadian Owners and Pilots Ass'n (COPA), in São Paulo, Braz. (Oct. 4, 2002).

- "Regulatory requirements for instructors are low," *Guidelines for Business Aviation Pilot Training,* NBAA, § 3.3, (Sept. 1, 2002), p. 10, *available at* < http://www.nbaa.org > (implicating flight instructor quality concerns).

[3] For example, this rethinking includes the evolution of FAA Practical Test Standards to include scenario-based training and risk management. *See, e.g.*, FAA, *Instrument Rating PTS*, FAA-S-8081-4D (Apr. 2004), *available at* < http://www.faa.gov/education_research/testing/airmen/test_standards/media/FAA-S-8081-4D.pdf > (incorporation of scenarios in the "plan of action" characterized as a "major enhancement"); Robert A. Wright, FAA, *Changes In General Aviation Flight Operations And Their Impact On System Safety And Flight Training* (Draft Version 2.0 Apr. 2002), p. 10, *at* < http://www.faa.gov/education_research/training/fits/guidance/media/whitepaper.doc > ("when coupled with state-of-the-art training devices and curricula, [scenario-based flight training] would be ideally suited to preparing general aviation pilots for operation in an increasingly complex NAS.").

See Arlynn McMahon, MCFI, *Making a Complete Pilot, NAFI Mentor* (Aug. 2005), pp. 10-13 (explaining scenario-based training); Michael W. Brown, *Transforming Science into Art – What the PTS can and cannot do for pilot training,* FAA AVIATION NEWS, Jul./Aug. 2005, pp. 26-28 ("As an instructor, your task is to develop scenarios, training exercises, and curricula that highlight all know risk factors and other considerations associated with a given PTS maneuver." *Id.* p. 28).

[4] Paul W. Caro, *Flight Training and Simulation*, *in* HUMAN FACTORS IN AVIATION 229 (Earl Wiener & David Nagel, eds. Academic Press 1998). Perhaps Caro's use of "previously unattainable" is better characterized by "previously *unattained*" because "our only limits are self-imposed." Email from Doug Stewart, MCFI (Aug. 11, 2005) (emphasis added).

[5] STICK AND RUDDER 3 (McGraw-Hill Publ'g 1972)(1944). "Langeweische is referring to stick and rudder skills. [His] statement reinforces the mentality that training should be maneuvers based. Yet we have realized that limiting ourselves to just training maneuvers (as we have pretty much since WWI) ignores the real killer . . . that being risk management/aeronautical decision making. At the time that Langeweische wrote this, most flying was conducted locally and engines were less reliable than they are today. Stick and rudder skills were what 'saved the bacon' in most instances. Today, if we don't train to proficiency in those skills we typically bend metal or crack composites, but do not necessarily kill ourselves. It is poor decision making skills that lead to most of the fatalities today." Email from Doug Stewart, *supra* note 4. "Balancing the objectivity needed to measure 'stick and rudder' skills with the subjectivity required to evaluate pilot performance in other critical areas is no simple matter." Michael W. Brown, *supra* note 3, p. 26.

[6] Doug Stewart, MCFI, *Technical Lessons,* NAFI MENTOR, Mar. 2005, p. 9. Stewart explains: "Because these airplanes are being used for long cross country flights for the most part, creating greater exposure to risk. Furthermore, many of the pilots that can afford these types of aircraft are *mega type A* personalities, that are not used to being told that they cannot do something." Email from Doug Stewart, *Id*. "Increasingly, these are the folks who have the means to fly, yet they (generally, often) disdain any questioning of their *judgment,* and so fail to avail themselves of opportunities to learn this vital flying skill." Email from Michael Radomsky, Pres., Cirrus Owners and Pilots Ass'n (Sept. 4, 2005).

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